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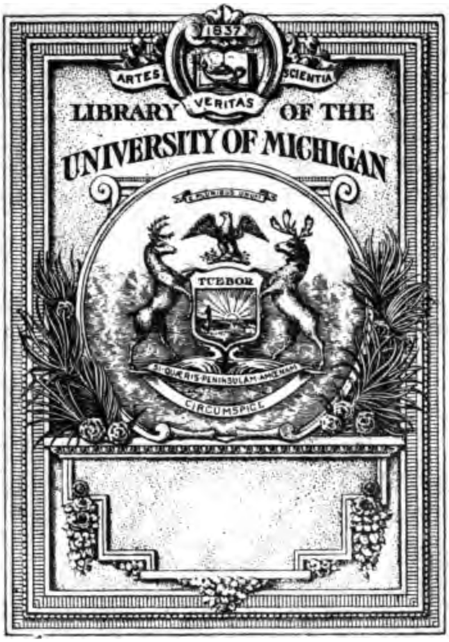

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Agite, O Adoleſcentes, & antequam Canicies vobis obrepat, Stirpes *jam alueritis, quæ vobis, cum inſigni* utilitate, delectationem *etiam adferent.*

Pet. Bellonius, de neglectâ Stirpium culturâ.

The Second Edition Corrected.

By *RICHARD BRADLEY*, Fellow of the ROYAL SOCIETY.

LONDON: Printed for W. MEARS at the *Lamb*
without *Temple-Bar*. M DCC XVIII.

To the Moſt High, Puiſſant and Moſt Noble PRINCE

HENRY,

Duke, Marquis and Earl of *Kent*, Earl of *Harrold*, Viſcount *Goodrich*, Baron *Lucas* of *Crudwell*, *&c.* Lord-Steward of His Majeſty's Houſhold, Conſtable of *Windſor*-Caſtle, and Lord Warden of *Windſor*-Foreſt, Lord Lieutenant and *Cuſtos Rotulorum* of the County of *Bedford*, One of the Lords of His Majeſty's Moſt Honourable Privy Council, and Knight of the Moſt Noble Order of the Garter.

My LORD,

YOUR Grace's Generous Encouragement of whatever may advance the Good of your Country, gave me the firſt Thought of inſcribing theſe Papers to your Great Name; and it is with Pleaſure that I mention your Grace's Permiſſion to make uſe of that Patronage, which my Ambition firſt led me to. I am too well acquainted with your great Attainments in all Kinds of Learning, to offer any conjectural Projects, or vain Hypotheſes, to ſo penetrating a Judgment: Theſe Sheets are the Reſult of many Years Experience, the only Foundation which ſuch accurate Philoſophers as your Grace will allow for the Improvement of Natural Knowledge.

ledge. It is a great Happineſs, when Men of your exalted Quality and large Fortunes honour the Sciences, not only with your Protection, but by being Maſters of them, become their Ornaments. Thus, my Lord, You are to our Studies in a Way of Art, what the *Sun* is to the Subject of them in a natural Way, which tho' placed at infinite Diſtance from the *Plants* of the *Earth*, yet by its Influence gives them Warmth, Action, Life and Beauty.

May it pleaſe Your Grace,

Inſtead of enumerating the ſeveral Virtues of your Illuſtrious Houſe, and your Own, which the Publick know already, I beg leave to congratulate my Country upon the Noble Spirit your Grace has always ſhewn in doing it the moſt important Services. The Men of Buſineſs, and the Men of Letters, the *State*, and the *Societies* of Learning, are equally your Debtors. For my own part, tho' the meaneſt among the latter, I ſhall endeavour, from

from your Influence, to proſecute the Subject I have here begun with new Vigour, humbly hoping to approve my ſelf, what I moſt deſire to be thought,

Your GRACE'*s*

Moſt Obliged and moſt

Obedient Humble Servant,

Richard Bradley.

THE

PREFACE.

AS there is no Subject of more General Uſe and Advantage than the Cultivation of Land, and the Improvement of the Vegetable World; ſo there is none which has been treated of more largely, and fell under ſuch a Variety of Pens of all kinds. The Publick, which is generally ſo good-natur'd on this Occaſion as to accept and encourage any thing that looks towards the bettering their Fortunes, has never been ſo much baulked in their Expectations as in Books of Agriculture. The Reaſons of which are, that ſome of theſe Writers have beſtowed their Pains in Collecting from Antiquity and foreign Soils, and thought they had perform'd great Matters, by heaping together a load of Obſer-

vations from Varro *and* Pliny, *without carefully conſidering wherein their Experiments differ from the Genius of our* Soils *and* Climates: *Others have employ'd their time in Copying from our old* Engliſh *Syſtems, and theſe have generally tranſcrib'd one another without the leaſt Acknowledgment of their Thefts, or adding one ſingle Improvement to the Knowledge of their Fore-fathers. And indeed, how ſhould it happen otherwiſe, when the Undertakers of this Subject, have generally been either covetous or illiterate* Gardeners *and* Planters; *ſome, that if they knew any thing New or Curious, had not the Spirit to communicate their Notions; and ſome that jogged on in the old beaten Track, without any Ambition to excel their Predeceſſors. We have now and then, it is true, a* Gentleman *ſtudious and capable of obliging the World, free from the narrow Views of Self-Intereſt, and employing his Hours for a more diffuſive Benefit than the Culture of his own private Eſtate or*

Garden ; an Evelyn, *a* Nourſe, *and a* Laurence *have given us ſomething equally new and juſt, built upon Experiment, upon the beneficial Subject of* Plantation. *But what are theſe when compared to that uſeleſs Number of unimproving Authors!*

Apparent rari nantes in gurgite Vaſto.

For my own part, I muſt confeſs that I have been a long time waiting for a Compleat Syſtem *of* Agriculture, *and have read many a fair promiſing Title, but have found nothing within but a barren Bulk of old Repetitions. This has excited me, who from a natural Bent of Genius, even from my Childhood, have had a Paſſion for* Gardening *and* Planting, *to reduce all my Notions and Obſervations into a regular Form, and endeavour to ſupply this General, and ſo much lamented Defect of other Writers, I ſhall think without Vanity, that I may do my Country no inconſiderable Service,* *if I can excite the Nobility and Gentry of the Kingdom to early* Plantations *upon their Eſtates, which I ſhall prove will not only redound to to their own private Profit, but the Advantage of the Nation in General. The Diſuſe of this Method was complain'd of by Mr.* Evelyn, *who ſays very juſtly,* There is no part in Huſbandry which Men commonly more fail in, neglect, and have cauſe to repent of, than that they did not begin Planting betimes. *And indeed ſuch Perſons who have been Deaf to Demonſtration at the firſt Poſſeſſion of their Eſtates, and are afterwards convinced of the vaſt Advantages to be reaped by an early* Plantation, *either from the Experience of their Neighbours or themſelves, muſt have a very pungent retroſpect upon this occaſion. Every Man is naturally willing to enjoy the Profits of the Works (as one may call them) of his own Hands, and he therefore who begins at Fifty to be ſenſible that he has loſt many a fair Thouſand by his neglect of improving his Eſtate between Twenty and his pre-*

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ſent Age, is to himſelf indeed a Loſer, but a Warning to others to avoid that Folly.

To begin then as methodically as I can, and take in all that relates to this Subject, I ſhall fairly tell my Reader what he is to expect in this Firſt Part, *and I hope he will pardon me if I mix a little Natural Philoſophy, ſuch as is plain, eaſy, and grounded upon my own Experience, with theſe Obſervations on* Gardening *and* Planting.

I ſhall then advance (what I think) a new Syſtem of Vegetation, and endeavour to prove that the Sap *of* Plants *and* Trees *Circulate much after the ſame manner as the Fluids do in Animal Bodies, which may be one Argument to ſhew the beautiful Simplicity of Nature in all her Works.*

The Generation of Plants *will next be conſider'd, and the Manner how their Seeds are impregnated, a Diſcovery which I made ſome Years ſince; this will be of great Uſe to all* Planters, *by directing them in the proper choice of their Seeds.*

The Difference of Soils will make another conſiderable Article, what are Natural *to each Tree, and how all kinds of Soils may be mended, alter'd, or improved by proper Mixtures with each other; a part of Husbandry that has, as yet, been but ſlightly touched upon, and yet the Whole depends chiefly upon it.*

The Method of Dreſſing of Woods, *and making* Plantations *of* Timber-Trees, *naturally follows; wherein I ſhall propoſe a new, eaſy, and practical Way of raiſing Woods, with very little Expence, which I hope will take off thoſe Fears which the Generality are taught to conceive of the preſent great Charge of* New Plantations.

And for the further Encouragement of all Gentlemen who propoſe an Advantage from their Woods, I ſhall add an Eſtimate of the Profits that will ariſe from an Acre of Land planted with Timber *and* Underwood *in* 9 *Years,* 17 *Years, and* 25 *Years after planting, which I ſhall prove will amount to above* 250 l. *beſide the Timber growing.*

Having now laid my Scheme before the Publick, I have nothing more to do than invite all Gentlemen who are Curious in

this

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[illegible] a [illegible] of Ground [illegible] and Underwood; [illegible] will ariſe from [illegible] Years, ſeventeen [illegible] ſive Years after [illegible] p. 59

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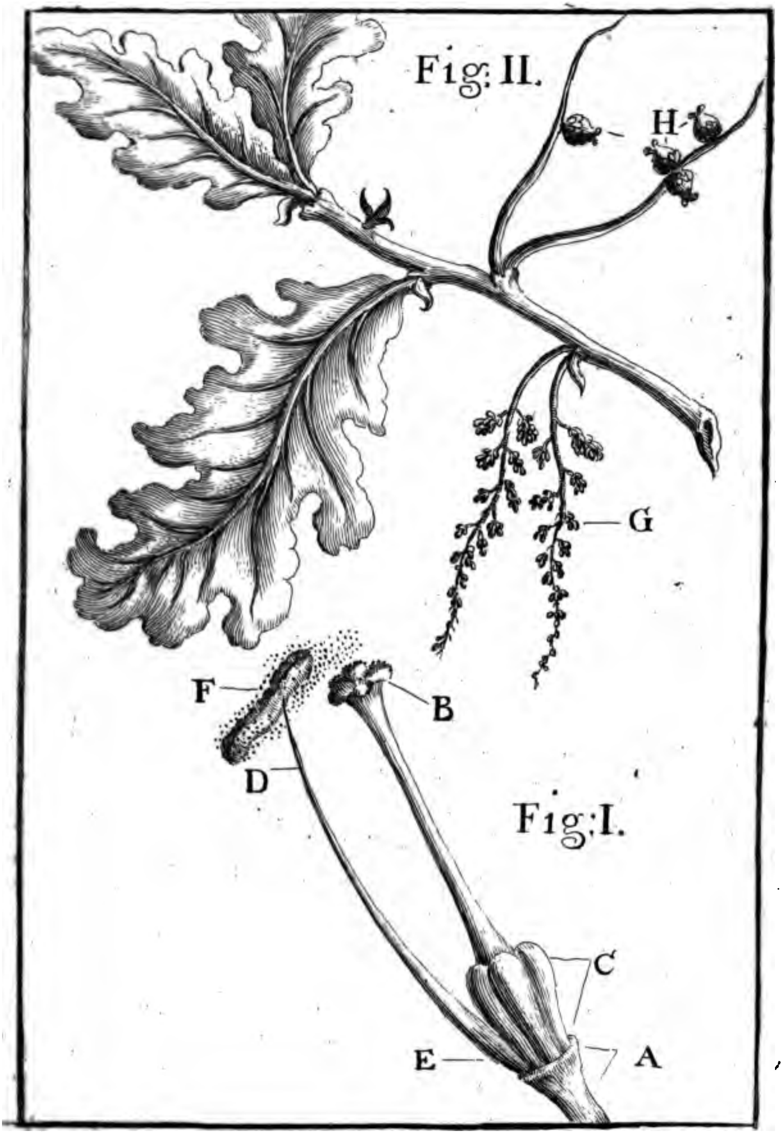
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NEW
IMPROVEMENTS
OF
Planting and *Gardening*,
BOTH
Philoſophical *and* Practical.

CHAP. I.

A Parallel between Plants and Animals; with an Attempt to prove the Circulation of the Sap in Vegetables.

VEgetation, in what-ever Degree I ſhall treat of it, is equally depending on the Order of Nature. Whether I ſpeak of *Trees*, *Shrubs*, or *Herbaceous Plants*, their Principles are equally the ſame: that is to ſay, they all alike draw their Nouriſhment by way of their *Roots*; which Nouriſhment is convey'd through proper Veſſels into the *Stem*, the *Branches*, *Leaves*, *Flowers* and *Fruit.*

Now that I may more eaſily explain by what Means every *Plant* receives and diſtributes its Nouriſhment to the ſeveral Parts of it, give me leave to draw a Parallel between *Plants* and *Animals*, that thereby the Nature of *Plants* may be the better underſtood.

The many curious Obſervations which have been made concerning the Structure of *Animal* Bodies, and what *Malpigius*, Dr. *Grew*, and my ſelf have remark'd in the Structure of *Vegetables*, may aſcertain to us, that Life, whether it be *Vegetable* or *Animal*, muſt be maintain'd by a due Circulation and Diſtribution of Juices in the Bodies they are to ſupport; we have all alike diſcover'd (with the help of *Microſcopes*) the ſeveral Veſſels and other Parts which compoſe a *Plant*; but I cannot agree in Opinion with the Authors I have mention'd, concerning the Courſe of the Juices thro' the Ducts and Channels which we have diſcover'd. It would be needleſs for me in this Place to relate their ſeveral Opinions, which would ſwell this Treatiſe to too great a Bulk; their Works may be peruſed by the Curious; I ſhall proceed to explain, that the *Sap* circulates in the Veſſels of *Plants*, as the *Blood* doth in the Bodies of *Animals*.

And that this new Syſtem may be the better underſtood, I think it proper in this Place to give a ſhort Deſcription of the Veſſels in *Plants*, and their Situation. Firſt then the *Root* of a *Plant* is of a ſpungy Nature, ready to admit into it ſuch humid Particles as are fitted (in the Earth, by a certain Temperature of Air) to be received into its Pores; And we may obſerve that the various Qualities of different *Plants* depend chiefly on the different Size of the Pores in their *Roots*, by which they receive their ſeveral Nouriſhments.

Secondly, We muſt underſtand that the Wood of every *Plant* is compoſed of Capillary Tubes, running parallel with each other, from the *Root* (upright) through the *Trunk*. Their Cavities are ſo ſmall that they are hardly to be diſcern'd by the natural Eye, unleſs in a Piece of *Charcoal*, *Cane*, or *Oaken Board*: Theſe Veſſels renew and augment themſelves every Year, as we may obſerve by cutting a *Tree* horizontally, which will diſcover to us the Latitudinal Shootings, and the Annual Additions of theſe Pipes, and for which Reaſon the *Trunks* of *Trees* increaſe in their Circumference. Theſe Tubes for Diſtinction ſake I ſhall call *Arterial Veſſels*. For it is through theſe the *Sap* riſes from the *Root* in fine *Vapour* ; for their Cavities are ſo ſmall, that it would be impoſſible they ſhould admit any thing whoſe Parts were ſo large as thoſe of a *Liquor.*

Thirdly, The Paſſages, or Pipes, by which the *Sap* returns downward, are much more open than the former, and are capable of receiving a Liquor into them ; theſe are placed immediately on the Out-ſide of the *Arterial Veſſels* between the *Wood* and inner *Bark*, and lead down directly to the Covering of the *Root.* They perform the Office of *Veins*, and contain the liquid *Sap* which is found in *Plants* in the Spring and Summer Months.

Fourthly, The *Bark* of a *Tree* is of a ſpungy Texture, and by many little Strings which paſs between the *Arterial* Pipes, correſponds with the *Pith.* And,

Fifthly, The *Pith* is compoſed of little tranſparent Globes chain'd together in like manner with thoſe Bubbles which compoſe the Froth of any Liquor.

In fine, a *Plant* is like an *Alimbeck*, which diſtils the Juices of the Earth ; as for Example.

The *Root* having ſuck'd in the Salts of the Earth, and thereby fill'd it ſelf with proper Juices for the Nouriſhment of the *Tree* ; theſe Juices then are ſet in Motion by Heat, that is, they are made to evaporate into *Steam*, as the Matter in a Still will do when it begins to warm; now as ſoon as this *Steam*, or *Vapour*, riſes from the *Root*, its own natural Quality carries it upwards to meet the Air; it enters then the Mouths of the ſeveral *Arterial Veſſels* of the *Tree*, and paſſeth up them to the Top, with a Force anſwerable to the Heat that put it in Motion; by this Means it opens (by little and little, as it can force its way) the minute Veſſels which are roll'd up in the *Buds*, and explain them by degrees into *Leaves*.

But as every *Vapour* of this kind when it feels the Cold will condenſe and thicken into a Water, ſo when the *Vapour* which I mention to riſe thro' the *Arterial Veſſels* arrives at the extream Parts of them (*i. e.*) the *Buds* of a *Tree*, it there meets with Cold enough to condenſe it into a *Liquor*, as the *Vapour* in a Still is known to do.

In this Form it returns by means of its own Weight to the *Root* down the *Veſſels*, which do the Office of *Veins*, lying between the *Wood* and inner *Bark*; leaving, as it paſſeth by, ſuch Parts of its Juice as the Texture of the *Bark* will receive, and requires for its Support.

It may be wonder'd at, that I have not taken more Notice of the *Pith* which has been always accounted the principal Part of a *Tree*; to which I ſhall only anſwer at this Time, that many *Herbaceous Plants* have not any *Pith*, and that I have ſeen the *Trunks* of large *Trees* deſtitute of it, and they have yet continued to grow and to bear *Fruit*, ſo that the Order of *Vegetation* may be explain'd without it; and indeed was I here to take notice of the ſeveral Particulars in *Plants*, I might ſwell this Treatiſe into a large Volume; but I am clearly of the ſame Opinion with him that ſaid, μέγα βίϐλιον μέγα κακὸν; and therefore ſhall confine my ſelf in this Work to ſuch Relations only, as I hope may be uſeful.

But to proceed: The following Experiment of the moſt Ingenious Mr. *Lawrence*, which he has mention'd in his *Clergyman's Recreation*, relating to the Jeſſamine, may convince us of the Certainty of the *Sap*'s Circulation in *Plants*. I ſhall give it in his own Words, "Suppoſe a plain *Jeſſamine-Tree* ſpreading "it ſelf into two or three *Branches* from "one common *Stem* near the *Root*. Into any one of theſe *Branches*, in *Auguſt*, inoculate a *Bud* taken from a yellow ſtrip'd *Jeſſamine*, where it is to "abide all Winter, and in the Summer, "when the *Tree* begins to make its "Shoots, you will find here and there "ſome *Leaves* ting'd with Yellow, even "on the other *Branches* not inoculated,

" till by Degrees, in ſucceeding Years, " the whole *Tree*, even the very *Wood* of " all the tender Branches, will be moſt " beautifully ſtrip'd and dy'd with Yellow " and Green intermix'd: *he adds*, that " tho' the inoculated *Bud* ſhould not ſhoot " out, or that it ſhould live but two or " three Months, and after that happen to " die or be wounded by Accident, yet even " in that little Time it will have communicated its Virtue to the whole *Sap*, " and the *Tree* will become entirely " ſtrip'd." And this Experiment my ſelf and ſeveral others have made ſeveral Years ago; which gave me the firſt Hint of the *Sap*'s Motion, and put me upon further Enquiry, it may I hope ſatisfy the Curious.

The Motion of the *Sap* continues in a *Plant* ſo long as the Sun's Warmth can keep it in a fluid State, but is condenſed or thicken'd by a Winter's Cold, and is thereby changed into the Conſiſtency of Gum, and being thus ſtagnated, cannot move any more till the Warmth of the following Spring, or ſome artificial Heat, rarifies it into its former liquid State.

It then renews its former Vigour, and puſhes forth *Branches*, *Leaves*, &c. But we muſt not ſuppoſe it is only the melted *Sap*, that was thicken'd in the Tree during the Winter, which does that Office of *Germination*,

mination, the *Root* has not been idle while the *Branches* have ſtood ſtill, it has not loſt the Moiſture of the preceding Autumn to impregnate and furniſh it ſelf with proper Salts or Nouriture, from whence the *Tree* is to be maintain'd. Here is a Supply laid in to furniſh Food for the Summer, as ſome induſtrious Animals will do to nouriſh themſelves in the Winter.

In the next Place it may not be amiſs to confute a common Opinion, *That the* Sap *returns to the* Root *in Winter*; for if it did ſo, how comes it that *Trees* which are cut down in *November* and *December* will put forth *Branches* and *Leaves* the following Spring, altho' they have no *Root* or Earth to feed them? This plainly ſhews that the *Sap* is condenſed or thicken'd in the *Tree* during its Circulative Courſe by extream Cold, and remains in that gummy State, 'till the Warmth of the Spring (as I have already ſaid) liquifies it, and by the *Vapour* which muſt then ariſe from it, the *Buds* are puſh'd forth, ſo long as there is Matter remaining in the Trunk ſufficient to furniſh them.

And now ſince it appears from what has been ſaid, that *Plants* have a Circulation of *Sap*, and proper Means whereby to ſupply themſelves with *Food*, let us conſider whether *Plants* in their ſeveral Kinds do not require different Sorts of *Food* one from the other, like various ſorts of *Animals* which differ in their *Dyets*.

Firſt then, *Land Animals* may be liken'd in general to thoſe *Plants* which are call'd *Terrene*, for that they live only upon the Earth, ſuch as *Oaks*, *Beech*, *Elm*, &c.

Amphibious Animals, ſuch as the *Otter*, *Beaver*, *Tortoiſe*, *Froggs*, &c. which live as well on the Land as in the Waters, may be compared to the *Willow*, *Alder*, *Minths*, and ſuch others.

The *Fiſh Kind*, or *Aquatick Race*, whether of the *Rivers*, or the *Sea*, are analogous to the *Water Plants*, ſuch as *Water Lillies*, *Water-Plantains*, &c. which only live in *Rivers*, or *Freſh Water*, or the *Fuci*, *Corals*, *Coraline*, &c. which are Sea or Salt Water *Plants*; and not any one of thoſe will live out of its proper Element. From whence we may conclude, how improper it would be to plant a *Water Lilly* in a dry ſandy Deſart, or an *Oak* at the bottom of the Sea, which would be juſt as unreaſonable, as if we ſhould propoſe to feed a *Dog* with *Hay*, or a *Horſe* with *Fiſh*; however, this Rule of Nature has been ſo little obſerv'd, even by ſome of our greateſt *Planters*, that we can hardly boaſt of good Succeſs in one out of five *Plantations* that has been made.

But I ſhall beg Leave to remark yet further, That as the ſeveral *Land Animals* have their reſpective *Dyets*, ſo have the *Terrene Plants* likewiſe their ſeveral *Soils* from whence they draw their Nouriſhment; as ſome *Animals* feed on *Fleſh*, others on *Fiſh*, *Roots*, *Leaves*, *Grain* or *Fruits*, ſo do we find that ſome *Plants* love *Clay*, others a *Loam*, *Sand*, or *Gravel*, *&c.* Nor is this all we ought to obſerve, we muſt conſider likewiſe how beneficial to every *Plant* is a right Expoſure, whether in a *Vale*, the Sides or Tops of *Hills*, expoſed to the *South* or *North* Winds, whether inland, or near the Air of the *Sea*; for it is a proper *Air* that keeps a *Plant* in Health, and fits it to receive its Nouriſhment, and a certain Degree of *Warmth*, peculiar to each kind of *Plant*, is likewiſe worth our Enquiry, for it is a *Warmth* natural to each *Plant* that puts its *Juices* in their proper Motion, as the ſame Degree of Heat will not melt every kind of Mixture, but this may be more fully explain'd in another Place; in the mean while I ſhall proceed to examine, in the next Chapter, by what Means *Plants* are capable of *Generating*, and to explain the Uſes of that Diſcovery.

CHAP. II.

Of the Generation of PLANTS.

IN the foregoing Chapter I have given my Reader ſuch Hints as may ſerve to explain my *Syſtem of the Circulation of Juices in Vegetables*, and have endeavour'd to ſhow that *Plants* are ſomewhat analogous to *Animals*; I ſhall now proceed to offer another Diſcovery, as new as the former, and depending on it, which I conceive will be of extraordinary Uſe to ſuch as raiſe Plantations from *Nutts*, *Maſt*, or any other kind of *Seed* or *Grain*. And altho' in this Treatiſe I have propoſed to give ſome Directions tending only to the Improvement of *Foreſt* and *Timber Trees*, yet I hope to be excus'd, if in the Explanation of this wonderful Myſtery of the *Generation of Plants*, I ſhall be forced to introduce ſuch kinds of *Plants* as are not to be found in *Forreſts*, and to make ſome of my Experiments in the *Orchard* or *Kitchen-Garden*.

Moſes tells us in his Account of the *Creation*, That *Plants have their Seeds in themſelves*; that is, every *Plant* contains that I know of, ſo it is not neceſſary that I ſhould place them in the Figure.

B is the Mouth of the *Piſtillum* or Paſſage which leads into the *Uterus* *C*, in which are three *Ovarys* fill'd with little *Eggs* or *Rudiments* of *Seeds*, ſuch as we find in the *Ovaria* of *Animals*, but theſe *Eggs* will decay and come to nothing, unleſs they are impregnated by the *Farina Fecundans* or *Male Seed* of the ſame *Plant*, or one of the ſame ſort.

From *D* to *E* is a *Stamen* of the *Lilly*, through which the *Male Seed* of the *Plant* is convey'd to be perfected in the *Apex F*, where, by the Sun's Heat, it ripens and burſts forth in very minute Particles like *Duſt*; ſome Particles of which *Powder* falling upon the Orifice *B*, is either convey'd from thence into the *Utricle C*, or by its magnetick Virtue draws the Nouriſhment with great Force from the other Parts of the *Plant* into the *Embrio's* of the *Fruit*, and make them *ſwell*.

Now that the *Farina Fecundans* or *Male Duſt*, has a Magnetick Virtue, is evident, for it is that only which *Bees* gather and lodge in the Cavities of their hind Legs to make their *Wax* with; and it is well known, that *Wax*, when it is warm, will attract to it any light Body. But again, if the Particles of this *Powder* ſhould be requir'd by Nature to paſs into the *Ovarys* of the *Plants*, and even into the ſeveral *Eggs* or *Seeds* there contained, we may eaſily perceive, if we ſplit the *Piſtillum* of a *Flower*, that Nature has provided a ſufficient Paſſage for it into the *Uterus*.

In the firſt Figure I have only given a Deſign of one *Stamen* with its *Apex*, to prevent Miſtakes in my Explanation, but the *Flower* of every *Lilly* has ſix of the ſame Figure and Uſe, which are placed round about the *Piſtillum* or Female Parts; ſo that 'tis almoſt impoſſible it ſhould eſcape from receiving ſome of the *Male Duſt* (or *Farina Fecundans*) falling upon it.

In this and other *Flowers* of the like Nature the *Piſtillum* is always ſo placed, that the *Apices* which ſurround it, are either equal in Height with it, or above it, ſo that their *Duſt* falls naturally upon it. And when we obſerve it to be longer than the *Apices*, we may then conjecture that the *Fruit* has began to form it ſelf, and has no longer occaſion of the *Male Duſt*. And it is likewiſe obſervable, that as ſoon as this Work of *Generation* is perform'd, the *Male Parts*, together with the *Leaves*, or *Covering*, fall off, and the *Pipe* leading to the *Uterus* begins to ſhrink.

We may further remark, That the top of the *Piſtillum* in every *Flower*, is either cover'd with a ſort of Velvet Tunic, or emitts a gummy Liquor the better to catch the *Duſt* of the *Apices*.

And now as we may find in the Deſcription I have given of the *Lilly*, that the *Uterus* is within the *Flower*; ſo on the other Hand the *Uterus* of a *Roſe* is without the *Flower*, at the bottom of the *Petals* or *Flower-Leaves*. And likewiſe in *Fruit-Trees*, the *Cherrys*, *Plums*, and ſome others, have their *Utricles* within their *Flowers*, and the *Gooſberry*, *Currant*, *Apples* and *Pears*, on the outſide or bottom of their *Flowers*. But farther, altho' Nature has deſign'd the *Duſt* of the *Apices* to fecundate the *Female Parts* contain'd in the *Flowers* of *Plants*; yet we obſerve that in ſome *Plants* the *Male* and *Female Parts* are remote from each other; as for Example, the *Gourd*, *Pumpkin*, *Melon*, *Cucumber*, and all of that Race, have *Bloſſoms* diſtinctly, *Male* and *Female*, upon the ſame *Plant*. The *Male Bloſſoms* may be diſtinguiſhed from the others, in that they have not any *Piſtil* or Rudiment of *Fruit* about them, but have only a large *Thrum* cover'd with *Duſt* in their middle; the *Female Bloſſom* of theſe has a *Piſtillum* within the *Petals*, or *Flower Leaves*, and the Rudiments of their *Fruit* always apparent at the bottom of the *Flower* before it opens ; and ſo in like manner all *Nut-bearing*, and, I think, *Maſt-bearing Trees* have their *Catkins* or *Male Bloſſoms* remote from the *Female Parts*.

The *Oak* for Example, which bloſſoms in *May*, has its *Male Parts* diſtinct from the *Acorns*, we find Strings of little *farinaceous Flowers* in great abundance, as in the Second Figure, mark'd *G*, remote from the Rudiments of the *Acorns* or *Fruit* mark'd *H:* And ſo likewiſe in the *Walnut*, *Cheſtnut*, *Hazel*, *Pine*, *Cypreſs*, and even the *Mulberry*, *Aſpen*, and others. I have obſerv'd that ſome Sorts of *Willows* change their Sex every Year, by producing only *Male Bloſſoms* or *Katkins* one Year, and the Year following *Strings* of *Female Bloſſoms*, which if they then happen to be near enough ſome *Flow'ring Male*, will produce *Seeds* not much unlike thoſe of an *Apocinum*.

When we view with a good *Microſcope* the *Male Duſt* of one ſingle *Plant*, we find every Particle of it to be of the ſame Size and Figure, but in ſome Caſes, it is of two Colours, as in the *Tulip*, where it is Yellow and Blue ; but as *Plants* differ from one another in their Figures and Qualities, ſo are the Figures of their ſeveral *Duſts* greatly different from each other ; a Grain of the

Duſt of *Geranium Sanguineum, Maximo flore* of *C, B, P*, is like a Bead of a Necklace with a Hole thro' it.

The *Farina* of the *Corona Solis perennis Flore & Semine Maximus. Hort. Lugd. Bat.* is a Globe ſet with Thorns; that of the *Ricinus Vulgaris, C, B, P*, is of the Figure of a Grain of Wheat.

And the *Acer Montanum Candidum* of *C, B, P*, affords a *Duſt* of the Figure of a Croſs; and in like manner does the *Farina* of every *Plant* differ in its *Shape* from the reſt.

The Female Parts of *Generation* in *Plants* are beſt ſeen in large *Fruits*, without the Trouble of the *Microſcope*; ſuch as the *Fruit* of the *Pumpkin* or *Melon*, where with the Natural Eye we may diſcover the *Veſſels* diſtinctly which make the *Tunick* or *Covering* of each *Ovary*; we may ſee how the *Seeds* are joyn'd to it, and by what End they receive their Nouriſhment. And again, between the ſeveral *Ovarys* encloſ'd in that *Fruit*, we may very eaſily perceive the *Vagina*, or Paſſage through which the *Farina Fecundans* has paſs'd to impregnate the *Seeds*.

It may perhaps be objected againſt this *Hypotheſis*, that there are many *Flowers* which hang downwards, as the *Crown Imperial*, the *Cyclamen*, &c. and that their *Piſtils* cannot receive the *Farina Fecun-*

dans upon them; but if we obſerve that the *Piſtils* of theſe *Flowers* are always more prominent, or ſomewhat longer than the *duſty Apices* which ſurround them, we may eaſily conceive that the glutinous Matter and Velvet Covering on the Extremities of the *Piſtils*, may be capable enough of receiving and holding ſome of the *Powder* as it falls; and whether the Intromiſſion of the *Farina Fœcundans* be requiſite or not, its Lodgment on the Mouth of the *Piſtillum* may, by vertue of its attractive Quality, perhaps fœcundate the *Seeds* contain'd in the *Uterus*; I am ſure in the Production of *Animals* their are yet greater Difficulties to encounter with; and it may be, if the *Analogy* between *Plants* and *Animals* was more enquir'd after by the Learned, they might diſcover many new Things which would be ſerviceable to the Preſervation and Benefit of *Animal Bodies*, as this Knowledge will be to the Improvement of the *Vegetable World*. We find, for Example, that *Trees* are generally longer liv'd than *Animals*, ſome of them living to four or five Hundred Years; nay, we have ſome Accounts by Tradition, of *Trees* that have liv'd above 2000 Years; the Reaſon I think is plain, for that, *Firſt*, *Trees* have no Senſation (for it is my Opinion, that the *Senſes* prey abundantly upon the *Juices* of the *Body* they belong to).

Secondly, They always breathe the ſame Air: And, *Thirdly*, They feed always upon the ſame ſimple *Diet*. And Mankind, who in the firſt Times is ſaid to have lived upwards of 900 Years, is ſaid to have fed upon a *Simple Diet*, and to have drank of the *clear Stream*; at leaſt he had then but little Variety of Food. But I hope my Reader will pardon this Digreſſion of mine, it may perhaps put him upon greater Diſcoveries.

I ſhall now proceed to what I call the *Demonſtrative Part* of this *Syſtem*. I made my firſt Experiment upon the *Tulip*, which I choſe rather than any other *Plant*, becauſe it ſeldom miſſes to produce *Seed*. Several Years ago I had the Conveniency of a large Garden, wherein there was a conſiderable Bed of *Tulips* in one Part, containing about 400 Roots; in another Part of it, very remote from the former, were Twelve *Tulips* in perfect Health, at the firſt opening of the Twelve, which I was very careful to obſerve, I cautiouſly took out of them all their *Apices*, before the *Farina Fecundans* was ripe, or any ways appear'd; theſe *Tulips* being thus *caſtrated*, bare no Seed that Summer, while on the other hand, every one of the 400 *Plants* which I had let alone produced *Seed*.

But as a farther Demonſtration that *Plants* generate after the manner I have endeavoured to account for it, I ſhall recommend to my Reader the following Experiment. Make choice of ſuch a *Plant* of the *Hazel* or *Philbud*, as you find to be in a bearing State, and far diſtant from any other of the ſame Sort; this *Tree* in *January* puts forth what are commonly call'd *Catkins*, which are long *Thrums*, compos'd of very ſmall *Flowers*, that towards the beginniog of *March* are cover'd with a fine *Duſt*, or *Male Seed*; 'tis then the *Bloſſoms* or *Female Parts* appear on the *Buds* of the ſame *Tree*; they are very ſmall, and hardly to be diſcern'd without ſtrict Enquiry, only offering to the View a ſmall Cluſter of *Scarlet Threads*, which are ſo many *Tubes* leading to the Rudiments of the *Nuts*; this happens at a windy Seaſon of the Year, that the *Male Duſt* may be more eaſily convey'd to the *Utricles* or *Female Bloſſoms* of the *Plant*. Now as ſoon as the *Catkins* appear, they muſt be carefully taken from the *Tree*, and it will produce no *Fruit* that Year, unleſs you have a mind to ſingle out any particular *Bloſſom* of it, which may be impregnated with *Catkins* from another *Tree*, gather'd freſh every Morning for three or four Days ſucceſſively, and duſted lightly over it, without bruiſing its tender

Fibres:

Fibras; And in like manner may the *Bloſſoms* of any other *Tree* or *Flower* be caſtrated, and will have the ſame Effect.

By this Knowledge we may alter the Property and Taſte of any *Fruit*, by impregnating the one with the *Farina* of another of the ſame Claſs; as for Example, a *Codlin* with a *Pairmain*, which will occaſion the *Codlin* ſo impregnated to laſt a longer Time than uſual, and be of a ſharper Taſte; or if the *Winter Fruits* ſhould be fecundated with the *Duſt* of the *Summer Kinds*, they will decay before their uſual Time; and it is from this accidental Coupling of the *Farina* of one with the other, that in an *Orchard* where there is Variety of *Apples*, even the *Fruit* gather'd from the ſame *Tree*, differ in their Flavour and Times of ripening, and moreover the *Seeds* of thoſe *Apples* ſo generated, being changed by that Means from their Natural Qualities, will produce different Kinds of *Fruit* if they are ſown.

'Tis from this accidental Coupling that proceeds the Numberleſs Varieties of *Fruits* and *Flowers* which are rais'd every Day from *Seed*. The yellow and black *Auricula's*, which were the firſt we had in *England*, coupling with one another, produced *Seed* which gave us other Varieties, which again mixing their Qualities in like manner, has afforded us by little and little, the numberleſs Variations which we ſee at this Day in every curious *Flower-Garden*; for I have ſaved the *Seeds* of near a hundred plain *Auricula's*, whoſe *Flowers* were of one Colour, and ſtood remote from others, and that *Seed* I remember to have produced no Variety; but on the other hand, where I have ſaved the *Seed* of ſuch plain *Auricula's*, as have ſtood together, and were differing in their Colours, that *Seed* has furniſh'd me with great Varieties, different from the *Mother Plants*. I believe I need not explain how the *Male Duſt* of *Plants* may be convey'd by the Air from one to another, by which this *Generation* and *Production* of new *Plants* is brought about; but I ſhall hint by the bye, to ſuch as plant *Orchards* for *Cyder*, that they ought to plant only one Sort of *Apple* in thoſe Orchards; and that ſuch Plantations be likewiſe remote from other Kinds of *Apples*, whoſe *Farina* would elſe certainly ſpoil the *Cyder-Fruit*, by ripening ſome ſooner and others later, which would occaſion almoſt a continual Ferment in the Liquor, and never permit it to ſettle or grow fine.

Moreover, a Curious Perſon may, by this Knowledge, produce ſuch rare Kinds of *Plants*, as have not yet been heard of, by making choice of two *Plants* for his

Purpoſe, as are near alike in their Parts, but chiefly in their *Flowers* or *Seed-Veſſels*; for Exmple, the *Carnation* and *Sweet-William* are in ſome reſpects alike, the *Farina* of the one will impregnate the other, and the *Seed* ſo enliven'd will produce a *Plant* differing from either, as may now be ſeen in the Garden of Mr. *Thomas Fairchild* of *Hoxton*, a *Plant* neither *Sweet-William*, nor *Carnation*, but reſembling both equally, which was raiſed from the *Seed* of a *Carnation* that had been impregnated by the *Farina* of the *Sweet-William*. Theſe Couplings are not unlike that of the *Mare* with the *Aſs*, which produces the *Mule*, and, in regard to *Generation*, are alſo the ſame with *Mules*, not being able to multiply their *Species*, no more than other Monſters generated in the ſame manner.

We may learn from hence, that the *Fruit* of any *Tree* may be adulterated as well by the *Farina* of one of the ſame Sort, which perhaps may be ſickly and of a Dwarf Kind, as by the *Duſt* of ſome other Kind near a-kin to it, and worſe than it ſelf. Now as ſuch Couplings may be very frequent in common *Woods*, ſo would I recommend the Choice of *Seed*, to be made only from ſuch *Plants*, or *Timber-Trees* as excel in Greatneſs or other good Qualities, and are far diſtant from others of meaner Sorts, which might degenerate their *Seeds*, and croſs our Expectations when they come to grow up; and this is as neceſſary to be obſerved among *Vegetables*, to maintain their good Qualities in the young *Plants* they are to produce, as it is in the Breeding of *Game-Cocks*, *Spaniels*, or *Running-Horſes*.

There is but one ſort of *Plant* that I know of, which ſeems to be out of this Danger of coupling with other Sorts, and conſequently of either improving or diminiſhing the Qualities of its *Seeds*, and that is the *Miſletoe*; the Parts of its Flowers are indeed as apt to *Generation* as thoſe of other *Plants*, but I have never ſeen any Variety of this *Plant*, or do I know any other nearly enough related to it to *engender* with it; for whether we find it growing upon the *Oak*, *Willow*, *Lime*, or any other *Tree* what-ever, the *Leaves*, *Flowers*, and *Fruit*, with its manner of *Growth*, are all alike. And ſince I have had Occaſion to mention it in this Place, give me Leave to take Notice of ſome Particularities belonging to it, as that it is neither to be propagated in *Earth* or *Water*, but upon *Trees* and *Plants* only. The Ancients made it a *Superplant*, peculiar to the *Oak*, and tell us, that altho' it ſeemingly produced *Seed*, they did not believe that that *Seed* could poſſibly be

E made

made to *vegetate*, becauſe I ſuppoſe they have try'd it in the *Earth* without Succeſs. But as it is ſo frequently found *growing* on other *Trees*, beſide the *Oak* in our Times, I ſhall take Occaſion at once to overturn their Opinion in relation to this *Plant*, by ſhewing how it may be *propagated* from *Seed* upon any *Tree* what-ever. About *Chriſtmas*, when the *Berries* are ripe, they may eaſily be made to ſtick upon the ſmooth *Bark* of any *Tree* you have a mind to *propagate* them upon, whether it be the *Oak*, *Aſh*, *Elm*, *Apple*, *Pear*, *Plum*, *Roſe*, *Gooſeberry* or *Currant*, &c. The *Viſcous Juice*, which encompaſſeth each *Seed*, will bind it faſt to the Part you place it upon, and with this ſmall Trouble you may expect young *Plants* the following Year, provided the Birds don't devour the *Seeds* you have ſown, therefore a Net would do well to ſecure them. I have ſeen twenty *Plants* of *Miſletoe* growing upon as many different Sorts of *Trees* and *Shrubs* in one Garden, which were *propagated* in the ſame manner I have mentioned. And I believe it would be very uſeful in correcting the too great Vigour of ſome *Fruit-Trees*, and bring them to bear, by taking from them the *ſuperabundant Juices*, which are always deſtructive to *Prolificity*, either in *Plants* or *Animals*.

And now from the Account I have given of the *Generation* of *Plants*, it appears that double *Flowers* ſeldom bear *Seed*, becauſe the *Duſt* of the *Apices* is too much crowded with the *Petals*, or *Flower-Leaves*, which for that Reaſon cannot eaſily reach the *Style* or *Piſtil* of the *Flower*, which is always prominent, and above the *Petals*, in full *Flowers*. It appears likewiſe, that the natural Properties of *Fruits* or *Seeds* may be changed by accidental coupling with other *Plants*; and that the *Seeds* ſo alter'd, may rob us of our Expectations in *Planting*, by having their Principles debauch'd by the *Duſt* of *diſtemper'd* and *degenerated Plants*. I could ſtill add many other Remarks relating to this Diſcovery, and give my Reader a more ample Deſcription of the *Generative Parts* of *Vegetables*, as I have obſerv'd them with the beſt *Microſcopes*; but I conceive I have ſaid enough to explain what I propoſed upon this Head, and ſhall therefore now proceed to offer ſuch Experiments as I have made relating to *Soils*, and endeavour to ſhew how they may be mended, alter'd, and improv'd, chiefly by proper Mixtures with each other.

CHAP. III.

Of SOILS *proper for the Nouriſhment of* PLANTS, *and Compoſts for forwarding the Growth of* PLANTS.

IF *Plants* in their ſeveral Degrees draw from the *Earth* ſuch *Aliment* as is proper for their Subſiſtence, and that as the Nouriſhment they receive is more or leſs ſuitable to them, ſo they proſper accordingly; we may then reaſonably infer that there is a Circulation of *Sap* in *Vegetables*, in ſome reſpect like that of the Blood in *Animals*, as I have already endeavour'd to ſhew in my firſt Chapter of this Tract. For in Animals it is very certain, that a *Diet* is required by them for their Subſiſtence, and that *Diet* being concocted, is the Matter from whence the Blood is drawn; and that as the Blood is, ſo is the State of the Body, either healthful or diſtemper'd; then it reaſonably follows, that we ought as carefully to provide wholeſome and natural Nouriſhment for the Welfare of each reſpective *Plant* we deſign to *propagate*, as we uſually do the proper *Food* or *Diet* of every *Animal* we have a mind to nouriſh. The Food of *Land Animals* is of three Kinds only; *viz.* *Fleſh*, *Herbs*, and *Seeds* or *Fruit.* So likewiſe the *Food* of *Terrene Plants* is of three Sorts, *Sand*, *Loam*, or *Mother-Earth*, and *Clay*, in their ſeveral Degrees; and as the ſeveral Kinds of *Fleſh*, the various Tribes of *Herbs*, and the many different *Fruits* have each their reſpective *Animals* to feed upon them, ſo *Sand* in its ſeveral Degrees, *Loam* of different Sorts, and *Clays* of all Kinds, have certain Proportions of *Salts* in them repectively, proper for the Nouriſhment of every *Plant.* *Fruit*, or *Seeds*, I eſteem to be the *medium Nouriſhment* between *Fleſh* and *Herbs*; and we find that every Land *Animal* will feed upon it, altho' their natural *Food* is either *Fleſh* or *Graſs*; as for Example, a Horſe, whoſe proper Food is Graſs, will eat Grain, and ſo Dogs and other Creatures who feed upon Fleſh, will eat Fruit. And I am of Opinion that the *Salts* therefore in *Fleſh*, *Fruit* and *Herbs*, are the ſame, only differing in the Proportions of their Quantities; that is, one Pound Weight of *Fleſh* may perhaps contain twice as many *Salts* as the like Weight of Grain or Seed, and one Pound of *Grain* twice the Quantity of Salts that may be found in a Pound of *Herbs* or *Graſs*. Now that all theſe *Salts* are proper for *Vegetation*, is evident by the common Practice of burying *Straw*, or *Litter*, *Brakes*, *Haulm*, and ſuch like, to enrich ſome *Soils:* Again, if *Fruits* and *Grain* be well conſumed, one Load of it laid upon a Spot of Ground, will enrich it more than ten Load of Horſe-Litter, or Common Dung, ſays Sir *Hugh Platt* from Experience; and we are very ſenſible of the prodigious Effect of *Carion*, *Leather*, or any Parts of *Animals* apply'd to the Roots of *Vegetables*.

So on the other Hand, in Natural Soils, what I call *Loam*, or *Mother Earth*, I ſuppoſe to be the *Medium* between *Sand* and *Clay*, that is an Earth of a certain Temperature, partaking equally of them both. And indeed all *Soils* that I know of, may be reduced under theſe three general Heads, *viz*, *Sand*, *Loam*, and *Clay*; for all others, altho' they may bear different Names, are in ſome reſpect depending upon one or other of theſe. *Gravels*, and all the open *Soils*, 'till we come to the *Loam* I mention, are of the *ſandy* Race; and the binding *Earths*, from *Loam* downwards, 'till we come to the *Stiffneſs* of Chalk it ſelf, may be ranged with the *Clay* Kind. I find all theſe *Soils* are alike tending to *Vegetation*, and have their *Salts* proper for it, but in different Proportions of Quantity; that is a Peck of *Clay* has perhaps twice as much *Salts* in it as the ſame Quantity of *Loam*, and that Quantity of

Loam twice as many *Salts* as the ſame Proportion of *Sand.* Now from this Argument of mine, it may ſeem at firſt View, that *Clay* is the moſt proper *Soil* to forward the *Growth* of *Plants*; whereas we know that *Sand* is much more apt to produce *Plants* quicker than any other *Soil*; but give me leave to explain this Paradox: *Clay*, whoſe Parts are cloſely wrought together, will not eaſily give out thoſe *Salts* contained in it; neither can the tender *Fibres* of every Plant make their Way thro' it, in ſearch of their Nouriſhment; but if we open its *Parts*, by digging and breaking it into ſmall Particles, and keep thoſe *Parts* open by a Mixture of ſome ſharp *Sand*, or other Body of the like Nature, we ſhall not fail to ſee the Effects of its Vigour.

On the other Hand, *Sand* is apt to puſh forward the *Plants* growing upon it early in the Spring, and will even cauſe them to *Germinate* near a Month ſooner than the *Plants* growing upon a *Clay*; the Reaſon is, that the *Salts* in the *Sand* are at full liberty to be raiſed and put in Motion upon the leaſt Approach of the Sun's Warmth: But then as they are haſty in their Work, ſo are they ſoon exhaled and loſt.

The *Clay* has certain *Plants* growing upon it, which are natural to it, and conſequently thrive better in it than in any other *Soil.*

And the *Sand* likewiſe has its natural *Plants*, which delight in it, and will not equally proſper in any other *Earth.*

However both the *Clay-Plants*, and thoſe of the *Sand*, will grow in the *loamy Soil* I have mention'd, for that it partakes of the Qualities of *Sand* and *Clay*, as Grain doth of *Fleſh* and *Herbs*, in reſpect to the *Food* of *Animals.*

I might here take Notice that the Word *Loam* is variouſly receiv'd and underſtood by *Planters*: Some mean by it the moſt common ſuperficial *Earth* met with in *England*, without any regard to the Proportions it bears of *Sand* or *Clay.* Others would have it more inclining to *Clay* than *Sand*: However, I ſhall endeavour to avoid all Diſputes that might ariſe concerning it, by once more repeating, that when I ſhall have Occaſion to mention it, I mean only that Degree of *Earth* which equally partakes of *Sand* and *Clay.*

This *Earth* then, which I call *Loam*, may either be of a black, or yellow Colour; but let it be either the one or the other, Experience ſhews us that *Plants* of all Sorts will grow in it, and for the Reaſons I have before mention'd, it appears to be a more beneficial *Soil* than any other, where-ever it happens to be found.

Now, as I take it, ſeeing that *Loam* is ſo happy in its Productions, that even *Plants* naturally bred in different *Soils* will thrive in it, it then ſeems reaſonable, that if by Mixtures of *Natural Earths* one with the other, we make ſuch a Compoſt as may nearly imitate it, we may expect far greater Succeſs from a Mixture of that Sort, (eſpecially in *Plantations* of durable *Trees*) than any Compoſition we can deviſe to be made with *Dungs*, or other forcing Ingredients. For it is very well worth our Remark, that *Animals*, and *Vegetables* alſo of all Sorts, are more laſting, as they are fed by ſimple and natural *Diets*, as I have hinted before. It is true, *Hot-Beds*, or any other Means of the like Nature, would indeed forward the *Growth* of *Trees* perhaps as much in one Year, as Nature of her ſelf would do in ſix: Or as Dr. *Agricola* of *Ratiſbone* pretends by his artificial Compoſt to raiſe *Foreſt-Trees* to exceed the Height of twenty Foot in a few Days time; but we may be aſſured they can never laſt out half their Days, for we find the ſame in *Animals*, but particularly in *Mankind*, who by Exceſs of unnatural *Foods*, and invigorating *Liquors*, ſhortens his Life; while on the other Hand, ſuch Men as have bare Subſiſtence, and are forced thro' Neceſſity to live uponthe natural Food of their own Country, are long-liv'd; I therefore would adviſe, as well from what I have ſaid, as from the Obſervations and Inquiries I have made of the *Growth* of *Timber-Trees*, that they may not be forced by any violent Means, if we deſign them to laſt long, and improve themſelves to be valuable; neither to take them from a Nurſery of rich Ground, and expoſe them afterwards in ſuch *Land* where they may want the ſame plenty of Nouriſhment they have been uſed to; for then they would certainly decline and deceive us. Let the Earth we deſign to plant them in be freſh and well open'd in its *Parts*; and if it ſhould be ſifted, it will help the ſtriking of young *Roots* at firſt Planting, and ſupport them 'till they can gather *Strength*.

I think I need not further explain, that equal Quantities of *Sand* and *Clay* well mix'd together will afford us the deſirable *Soil* we ſeek after, in Caſe the *Loam* or *Mother Earth* I mention, cannot conveniently be met with. But this has its greateſt Uſe, when we make new *Plantations*, for we ought alſo to examine the Depth of the *Soil* underneath, into which our *Trees* are afterwards to puſh their *Roots*, and from whence they are to draw their chief Nouriſhment, and that may be beſt known from Obſervation; that is by examining the moſt vigorous *Trees* of every Kind, and obſerving the *Qualities* and *Depths* of the *Soils* they feed from, and from ſuch Examples, to make our *Plantations* accordingly; we ſhall then find that an *Oak* will never make good *Timber*, if it be *planted* or *ſown* upon a ſhallow Rocky *Soil*, and at the ſame time that an *Aſh* will grow there; but this I ſhall more fully explain in the next Chapter of *Foreſt Trees*.

And now ſeeing that ſome delight more in the quick *Growth* of the *Trees* they plant, than the Advantages which would accrue to their Families, from a regular and natural *Growth* of their *Plantations*, I ſhall mention ſome *Mixtures* which have been experienced to forward the *Growth* of *Trees*.

Mixture the Firſt. If the *Soil* be ſtiff inclining to *Clay*, let it be well broke and open'd, of which take about five Load, add to it an equal Quantity of *Heath Turfs* burnt, let theſe Ingredients be well mixed and ſifted, or ſkreen'd together, after they have lain for a Winter in a *Heap* or *Ridge*. This Compoſt will forward *Trees* extreamly.

Second Mixture. To four Load of *ſtiff Soil* broke and open'd as before, add as many Load of *ſharp Sand*, to which put two Load of the *Aſhes* of *burnt Furzes*, *Gorſe*, *Fern*, *Weeds*, or *Wood*; let this be well mix'd together about *September* or *October*, and be laid up in a *Ridge* 'till the *February* following, to be ſkreen'd or ſifted for Uſe. Sir *William Bruce*, a Gentleman of *Scotland*, made uſe of the like *Mixtures* in his Garden, with the Succeſs he deſired.

Third Mixture. One Load of *rotted Wood*, ſuch as may be found under a Wood Pile, or for want of that, the ſame Quantity of *rotted Leaves*. To either of theſe add a Load of *burnt Graſs Turf*, two Load of *Sand*, and the like of *ſtiff Soil*, this Compoſition muſt be well mix'd and laid in a *Ridge* from *October* 'till *February*, and be ſifted for Uſe. *N. B.* Theſe artificial *Soils* ſhould always be compos'd about *October*, and ſifted the following Spring, juſt before you uſe them; for if you ſhould prepare them in the Spring, the Summer's Heat would exhale their *Volatile Spirits*, and beſides, *Weeds* would be apt to rob them of their Nouriſhment, unleſs they were to be made in ſome ſhady Place under *Trees*.

Fourth Mixture. Take the Quantity of a Load of *Rape Seeds*, after the *Oil* is preſs'd from them, which may be very eaſily had at the *Rape-Mills* at a ſmall Expence; add to them two Load of *Sand*, one of *ſtiff Soil*, and one of burnt *Heath*, or *Graſs Turf*, prepared as the others, and ſifted, will greatly forward the *Growth* of any *Plant*.

Fifth Mixture. Take one Load of *Malt Grains* (after Brewing) add to it two Load of *Sand*, and two of *ſtiff Soil*, mix'd and prepared as before, it will make an incomparable Compoſt to haſten the *Growth* of *Plants*.

Sixth Mixture. *Sheeps-Dung*, with a like quantity of *Wood-Aſhes*, and twice as much *Loam*, or *Mother Earth*, prepared as before, will greatly forward the *Growth* of *Herbs* and *Trees*.

Seventh Mixture. Take of *Horſe-Dung* well conſumed, two Load; add to it one Load of *Turf Aſhes*, two Load of *Sand*, and two of *ſtiff Earth*, prepare this *Mixture* as before, and it will greatly forward *Germination* of *Plants*: But if *Sea-Coal Aſhes* are more eaſily found, put them in the Place of the burnt *Turf* and then add one Load more of *ſtiff Earth* to the Compoſt.

And now beſides the ſeveral Compoſitions which I have ſet down, I might add thoſe which I have known to have been prepared with the *Soil* of *Poultry*, that feed upon Corn or Grain. I found thoſe Ingredients very hot and full of Salts, greatly tending to *Vegetation*, and abundantly quicker in their Operation, than the *Soil* of *Animals*, which only feed upon on *Herbs*; but that is no great Wonder, if it be true what Sir *Hugh Platt* ſays, that one Load of Grain will enrich Ground more than ten Load of common *Dung*, and alſo from what I know from Experience, and have mention'd in the Fourth and Fifth *Mixtures* preſcrib'd in this Chapter. Now if ſimple *Grain* by Infuſion only (if I may ſo term it) in the *Mixtures* or *Compoſts* I have directed, has a good Effect, we may eaſily imagine how much more powerful it will be when it has paſs'd through the Bodies of *Animals*. I could ſay much more upon this Head, but as it is my Deſign to be as ſhort as may be convenient, and purpoſing chiefly in this Treatiſe to contribute ſuch Experiments as may tend to the Improvement of *Plantations* of *Foreſt-Trees*; I ſhall not here enlarge upon *Soils*, but leave ſome Particulars for another Work, and ſum up this Chapter, with two or three ſhort Remarks, firſt that a *Preparation* of natural *Soils* anſwerable to the *Loam* or *Mother Earth* I have mention'd, is certainly the beſt for all Sorts of *Foreſt Trees* to be *planted* or *ſown* in, if we deſign them to make good Timber; and if it is rather deſired that ſuch *Trees* ſhould grow quick, and conſequently be ſubject to decay early, or be prejudiced by *Blights*, I have made mention of ſuch forcing *Compoſts* as will ſet them forward in their *Growth*; but in my Opinion might be better employ'd in Gardens for the Production of ſhort-liv'd *Plants.*

CHAP. IV.

Of TIMBER-TREES *and* UNDERWOOD, *and of Dreſſing and Cleaning of Woods.*

AS there is nothing which contributes more to the *Honour*, *Beauty*, and *Welfare* of an Eſtate, than timely and ſufficient *Plantations* of *Timber-Trees*, ſo I have choſe to make the *propagating* of *Timber* my preſent Subject, and what I have ſaid in the former Chapters may, I hope, contribute ſomething towards our Succeſs in the Undertaking, which will greatly contribute to the Welfare of every Man of Eſtate, if it be rightly underſtood: For altho' a Gentleman may perhaps be poſſeſs'd of a plentiful Fortune, ſuppoſe of 10000 *l. per Annum*, he ought certainly to conſider, that in proceſs of Time he muſt provide Fortunes for Children out of that Eſtate, proportionably to his Honour; and again, his Children muſt likewiſe make farther Proviſions out of their ſeveral Parcels for their Iſſue, and ſo on, 'till at length, in ſix or ſeven Generations, we ſhall find the paternal Eſtate cut to Pieces into ſo many little Shares that there will hardly remain any Idea of the plentiful Stock of their Anceſtors. Now I ſay, it would certainly be a Token of great Wiſdom, for every Gentleman of Fortune, not only to conſult all proper Means how to maintain the Bulk of his Eſtate entire, but continue it ſo in his Line, wiſely guarded againſt the Hazards of Fortune, and even the natural Conſequences I mention, by timely and neceſſary *Plantations* upon it, which would be ſo many Monuments of his Wiſdom, and improving Treaſuries for the good of his Poſterity: And beſides how beneficial would ſuch *Plantations* be in Caſe of extraordinary Accidents, the Profuſeneſs of a young Heir; the Diſcovery of Iron or Lead Mines, where Wood is of ſuch extraordinary Uſe; or for the raiſing a Sum of Money upon any Emergency: I may add likewiſe, beſides the private Intereſt of the Proprietor, it would be of general Uſe, and for the Nation's Good. How happily is *England* ſituated for Trade, what Benefits doth ſhe receive from her Shipping, and therefore how profitable and uſeful is her *Timber*, which will yet become more valuable than ever, in that ſo much is continually cut down, and very little Care taken to make new Plantations for future Benefit. In a word, the preſent State of *Timber* in *England* is ſo very inconſiderable, in reſpect to the great Uſe made of it, and even that which remains growing is generally ſo much neglected in its Culture, that I hope ſome Directions for its Improvement may not be unacceptable to the World.

The *Trees* which have been commonly propagated in *England*, for *Timber*, are the *Oak*, *Aſh*, *Beech*, *Elm*, *Cheſnut* and *Walnut*; theſe are of the upper Claſs, and we may add to them the *Ilex* or *Evergreen Oak*.

Of the lower Rank for *Underwood*, or more indifferent Uſe, are the *Hazel*, *Alders*, *Willows*, and ſome others of leſs Note.

The *Oak*, like all other *Plants*, has its Varieties, which are taken Notice of by the *Botaniſts*. I have obſerv'd about five Sorts in *England*; but I ſhall only recommend two Kinds of them to be planted for *Timber*. The firſt and beſt, in my Opinion, is the *upright Oak*, which grows more erect than any other; and the ſecond is the *large ſpreading Oak*. We have many Inſtances of theſe Kinds that have attain'd to ſuch prodigious Greatneſs of Stature, that the *Timber* alone of one Tree has been ſold for upward of 50 *l.* The *Oak* doth not only afford us the moſt ſerviceable *Timber* for Naval Architecture, but alſo for other Building. Its *Bark* is uſeful to *Tanners*, and the *Oak* is therefore cut down about *April*, when its *Bark* will peel. The *Acorns* are excellent Food for Hogs. This *Tree* delights in moiſt Ground of a good Depth, and will proſper in the coldeſt *Clay*; and, as Mr. *Evelin* ſays, in Gravel alſo. It is noted likewiſe, that ſome *Oaks* having been ſown in Hedge-Rows, have in the ſpace of thirty Years born a *Stem* or *Trunk* of a Foot Diameter. I have my ſelf ſeen ſome ſeedling *Oaks* of twenty Years Growth of near that Subſtance, which had never been removed from the Place where they were ſown; and I would adviſe that every Plantation of *Oaks* be ſet from *Acorns* on the very Spot where they are to remain, and that we are likewiſe careful to chuſe our *Acorns* from thriving vigorous Trees, for the Reaſons I have before mention'd; the Diſtance between them ought to be about 33 Foot, and the ſaid ſpace between the *Oaks* ſhould be interſown or planted for *Underwood*, as I ſhall direct in the following Chapter.

Of the *Aſh* there are two Sorts (falſely diſtinguiſh'd by the Names of *Male* and *Female*) which moſt deſerve our Care in that they are quick Growers, and riſe to a prodigious Stature; beſides theſe there are ſeveral other Kinds which are not worth our Notice. So that we ought to be careful in the Choice of the *Keys* or *Seeds* we deſign to ſow. I have heard of *Aſh*-Trees of 40 Years Growth from the *Seed*, that have been ſold for twenty five Pounds a-piece, which have grown on Plains in light *Earth*, not very deep: And Mr. *Evelin* tells us, that one Perſon planted ſo much of this ſort of *Timber* in his Life-time as was valued worth fifty thouſand Pounds to be bought; which he juſtly remarks was very good Encouragement for a ſmall and pleaſant Induſtry. The *Keys* of this *Tree* are ſowed about *October*, or elſe may be laid at that time in *Sand*, *S. S. S.* 'till the following Spring, and then ſown. The *Timber* of the *Aſh* is uſed for Ploughs and Axel-trees, Wheel Rings, Oars, and many other Mechanick Works; and if we propagate the *Aſh* for *Underwood* only, it will turn to good Account for Hoops and Hop-Poles. It may be cut about *February*.

The *Beech* delights in Mountains. In *Berkſhire*, on the Chalky Hills, this Tree is very proſperous, and attains a conſiderable Stature; its *Timber* is uſed about Keils of Ships, and many Implements of Huſbandry; it is the moſt common *Fire-wood* of *England*, eſpecially about *London*, where Billets are uſually burnt. Among the Coal-Pits near *Newcaſtle upon Tine* this Wood is much uſed to make Cart-Ways, where for many Miles the Wheels of the Coal-Waggons run upon it, which ſaves the Expence of Horſe-Fleſh. This Wood will remain ſound for many Years in thoſe marſhy Lands, and is much eſteem'd for that uſe. From the *Seed*, which is call'd *Beech-maſt*, the *French* have long ſince drawn a very ſweet *Oil* for eating, and lately the ſame has been practiſed in *England*. This *Seed* is likewiſe good to feed *Deer*, *Hogs* and *Fowl*; it may be ſown about *October*, or put in *Sand*, like the *Aſh-Keys*, 'till Spring, the better to preſerve it from *Vermin*. The *Timber* may be cut as the former.

We have many Sorts of *Elm* frequent in *England*, among which the *Vulgar* or *Mountain Elm* is counted the beſt for *Timber*; I ſhall therefore recommend this *Sort* to the Planter, before all others. It may be propagated from the *Seed*, or *Samera*, which ripens and falls from it towards the latter End of *April*, or Beginning of *May*, it muſt then be ſown in fine ſifted *Earth*, or what I call *Loam* in the foregoing Chapter. This *Seminary* muſt be made in a ſhady Place, and water'd from time to time, as the *Earth* begins to dry; but beſides this way of raiſing *Elms*, we may either propagate them from *Layers*, or *Suckers*; which laſt muſt be tranſplanted into *Beds* of fine *Earth* about the beginning of *March*, and kept well water'd. And ſo naturally is the *Elm* inclined to *Vegetation*, that I have heard ſome affirm, by ſowing only the *Chips* of it in a Piece of plow'd Ground, they have rais'd a large Quantity of theſe Trees; which perhaps is not impoſſible; for I am aſſured in other Caſes the *Buds* and *Leaves*, nay the very *fibrous Roots* of *Plants*, have been made to *vegetate* and produce Trees; as for Example, the ſingle *Leaves* of *Oranges* have been made to ſtrike *Root*, and produce *Branches*, *Leaves*, *Flowers* and *Fruit*, by ſetting them half way in the *Earth*; and Mr. *Fairchild* of *Hoxton* has done the like with *Leaves* of the *Lauruſtinus*; however, let us raiſe our *Elms* which way we will, I ſhall adviſe that they be not *planted* out of their firſt *Beds* 'till they have ſtood there two Years; and then remove them to greater Diſtances from each other, and let them ſo remain 'till you plant them out for good, at about twenty Foot diſtance, in *Beds* of the ſifted *Loam* directed; they grow quick, give a fine Shade, and afford valuable *Timber*; and if the *Witch Elm*, or *Dutch Elm*, be grafted upon this Kind, we may expect them to make *Shoots* of above eight Foot long in one Year, and produce *Leaves* of an extraordinary Bigneſs, but the Wood will then be not ſo valuable. This Tree delights in an *Earth* competently fertile, neither too dry or ſandy, or too cold and ſpongy; nor does it require a deep *Soil*. Let it be moderately refreſhed with Water after *Planting*; and to keep the *Earth* about the *Roots* more open, and ready to receive Wet, cover the *Bed* it is *planted* in with rotted *Fern*, or other ſuch like Matter: A Year or two after *Planting* you may refreſh the young *Fibres* at the Extremities of the *Roots* with ſome fine ſifted *Earth*, or any one of the four firſt *Mixtures* mention'd in the foregoing Chapter, which will make the Tree ſhoot prodigiouſly, for that they contain *Vegetative Salts* in great abundance. The *Timber* of this *Tree* is very ſerviceable, eſpecially where it may always lie wet it will laſt a long time; it is mightily uſed for Pipes, Pumps, Mills, and ſuch Parts of Ships as lie conſtantly under Water; in a word, it is almoſt of general uſe. The Time of Felling it is from *November* to *February*.

We have two Kinds of *Cheſnut* in *England*, that which bears *edible Fruit*, and the other which is call'd the *Horſe-Cheſnut*: The firſt of theſe Trees affords good *Timber*, and the latter is only deſirable for its pleaſant Shade and beautiful Flowers: Theſe *Trees* may both be raiſed by ſetting the *Nuts* about three Inches deep, in a light ſandy *Soil*, towards the latter End of *February*, or Beginning of *March*; but as the firſt only is uſeful, ſo I ſhall chuſe to recommend it to the *Foreſter.* It delights in high Grounds remote from Water, which would ſpoil both its *Timber* and *Fruit*, and ſhould indeed be ſet from the *Nut*, where it is always to remain, for it's apt to ſuffer greatly by removing, and ſpread too much in its Branches, when it loſes its *Tap-root*, as all other *Tap-rooted* Trees are known to do. Its *Timber* is laſting if it be kept dry, and good for Building; and if it be planted for *Underwood*, it will afford excellent Poles and Stakes in nine Years after ſowing, worth at leaſt 10*s.* *per* Hundred: The *Fruit* is ſometimes uſed at our Tables, but more commonly given to *Deer* and other Cattle to fatten them. We may fell this *Tree* any time between *November* and *February*.

Among the *Botaniſts* there are reckon'd many ſorts of *Walnuts*, two only of which I ſhall recommend to the *Planter*, viz. That with the *ſoft Shell* for the ſake of the *Fruit*, and that with the *black Grain* for the Goodneſs of its *Timber*; they are both rais'd from the *Nuts* like the *Cheſnut*, and ſhould like them be ſown in the Places where they are to remain. They are in great danger of Death if they loſe their *Tap-root*, but will thrive extreamly if they have Depth of Earth to ſtrike into. The *Walnut* grows well in *Loam*, but will flouriſh alſo in *Chalk* or gravelly *Soil*, either on hilly Ground or in a Vale, which (I think) ſhews it to be a foreign *Plant*; for, as I have obſerv'd, every *Plant* natural to *England*, has a *Soil* and *Expoſure* peculiar to it ſelf, and will ſcarce be made to grow in any other ſort of *Land* or *Situation*. I have ſeen ſome *Walnut* Trees of forty Years *Growth* from the ſetting of the *Nuts*, that were valued at five Pounds a-piece, and others ſtanding by them, which were Trees planted at the ſame time (as the Owner himſelf inform'd me) that were not worth thirty Shillings a Tree; and the like Obſervation has been made of other *Tap-rooted* Trees, but particularly the *Oak*; ſo great is the difference of *Growth* in downright rooted *Plants*, when they are ſet from *Acorns* or *Nuts*, and *tranſplanted* from the *Nurſery*. The *Timber* is much uſed for Chairs, Cabinets and Houſhold Furniture; it is durable, and an Enemy to Worms, from its exceeding Bitterneſs. The *Nuts* yield abundance of Oil, and take Place among the beſt *Fruits* for the Table. This *Tree* may be cut down when the *Sap* is ſix'd, *i. e.* from *November* to *February*.

The *Ilex* or *Evergreen Oak* is a *Plant* which produces admirable *Timber*, but is more particularly valuable for its *Knee-Timber*, which is much tougher than that of our *Engliſh Oak*; it is in ſuch Requeſt among our Ship-Carpenters, that many Ships lading of it has been brought to *England*. The *Tree* is of quick *Growth*, and will attain to a very conſiderable Height, even to equal the talleſt of the *Engliſh Oaks*, to which Perfections we may alſo add the Beauty of its *Leaves*, which are green all Winter.

That curious Gentleman *Robert Balle*, Eſq; *F. R. S.* has, among other Improvements for the Good of his Country, propagated a large Parcel of theſe *Trees* at *Mainhead* in *Devonſhire*, ſome of which have in about 30 Years Space, grown to a conſiderable Greatneſs of Stature. And it is to be wiſh'd that others would follow his Example in the Culture of this beautiful and profitable *Tree*. This Gentleman has rais'd ſome thouſands of them from *Acorns*, and tranſplanted them with Succeſs and great Judgment; and to follow his Method, we muſt ſet the *Acorns* in *Loam* well ſifted, in Garden Pots about *February*, and turn them out with the Earth about their *Roots* when they are two Years *Growth*, to tranſplant them afterwards at proper Diſtances, where they are to remain. Theſe, like our *Engliſh Oaks*, are *Tap-rooted*, and therefore delight in deep *Soil*, they proſper in moiſt Land, rather on a Plain than on hilly ground. If we conſult the *Anatomy* of *Plants*, we ought to be very careful not to injure their *Tap-roots*, which are always anſwerable to the *leading Shoot* on the *Top* of the *Tree*; it is therefore reaſonable to believe, that a *Plant* by loſing of that *down-right Root*, is in Danger of loſing alſo the *Top-Shoot*, which is fed from it. And altho' a Tree may ſtrike freſh *Roots* after the *Amputation* of this *leading Root*, yet we may find by Experience, that the *Sap* will then puſh forth *Branches* in the Sides of the *Stem*, and diſcontinue its upright *Growth*. We may fell this *Tree* as we do the other *Oak* for the ſake of its *Bark*, the *Acorns* are good Food for *Deer*, and *Fowl*, which greatly delight in the Shelter of theſe *Trees*.

Having mention'd the moſt valuable *Trees* for *Timber*, I am in the next Place to take Notice of ſuch others as will afford us the moſt valuable Crops of *Underwood*. I have already obſerv'd that the *Aſh* and *Cheſnut* may be order'd in this Manner, and bring conſiderable Returns to the Proprietor. The next which I ſhall propoſe for this Uſe, is the *Hazel*, which if it be rightly managed will turn to good Account in *Coppices*. This *Plant* may be raiſed from the *Nuts* ſown a little after they are ripe, in cold, dry, ſandy Ground; but if the *Land* happens to be more inclin'd to *Clay*, plow it in *Autumn*, and let it mellow with the Froſts 'till *February* before you ſow them. The learned adviſe that after the *ſeedling Plants* are come up, they ſhould be weeded or hough'd ſo as to leave the *Plants* at three Foot Diſtance from each other, and after three Years *Growth*, to cut them off within half a Foot of the *Ground*, by which Means they will be made to ſhoot forth many *Twiggs* from each *Stem*, which in nine Years time (*i. e.*) twelve from putting in the *Seed*, will be fit to cut for Hop-Poles, Hoops, Fagots, and other ſuch uſes; but if you rather chuſe to uſe them for Hurdles, then they may be cut at five Years *Growth*. After the firſt Cutting, you may cut again in ſeven or eight Years, if they like the Ground, for Poles and Hoops as before, and ſo continue to do from time to time, as you ſee Occaſion. But theſe *Trees* may be likewiſe propagated by *Suckers*, which are frequently found growing about the *Roots* of old Trees, but are not very certain in their *Growth*, after tranſplanting, unleſs they are carefully water'd till they have ſtruck good Roots. In a Plantation of this Kind, which may be made at any time between *October* and the Beginning of *March*, when the Weather is open, theſe *Suckers* muſt be ſet at three Foot Diſtance, and cut down within half a Foot of the Ground about the Beginning of *April* following; or they may alſo be propagated by laying down their *Branches* or *Twiggs* about three Inches in the Earth, which will furniſh us with abundance of young *Plants* in a Year's time. This Work muſt be done about *October.*

The next I ſhall treat of is the *Willow*, an *Amphibious Plant.* There are many Sorts of it diſtinguiſh'd by the *Botaniſts*, which ſhould I mention here by their ſeveral Names, I might perhaps perplex my Reader, and ſhall therefore only mention them as two Kinds, firſt the *Oziers*, which afford Twigs for the Basket-makers, and binding Rods, and ſecondly the Tree kind, or *Withy.*

Firſt then the *Oziers*, which afford us *Twiggs* for *Wicker-works*, are raiſed by ſetting *Slips* of two or three Years *Growth* about a Foot deep in marſhy or wet *Ground*, at two Foot diſtance from each other; this *Work* is beſt done about the middle of *February*, if the Weather be open; the ſecond Year after *Planting* they may have their *Tops* cut off, leaving their *Stems* about a Foot above Ground, ſo will they put forth *Twiggs* which muſt be again cut down early the *Spring* following, which *Work* being continued every *Year*, the Owner will find conſiderable Advantage from ſuch *Plantations*. An Acre of Ground thus managed will turn to better *Account* than the like Parcel of *Land* ſown with *Wheat* or any Grain whatever, and it may be for this Reaſon that ſome would pretend to raiſe vaſt Sums of Money by planting ſeveral thouſand *Acres* in this way, as I have been informed ſeveral Gentlemen propoſe to do. It is certain at preſent *Oziers* turn to good *Account*, but I am of Opinion that if we had only as many more planted as we have now growing in *England*, the Markets would be over-ſtock'd with them, and their Price would fall. And beſides, every *Ground*, as I have ſaid before, will not produce them. In this Treatiſe may be found the ſeveral ſorts of *Trees* for Uſe, the different *Lands* they require for their Welfare, and the vaſt Returns they would bring in, if large *Plantations* were made of the ſeveral kinds, by a diſcreet Planter, who knew how to allot to every *Soil* the *Tree* proper for it. But I ſhall proceed now to give ſome Directions for the propagating of the large *Withy* or

Tree kind, which will alſo in a few Years time, afford profitable, though not very durable *Wood.* Its Uſe is for Perches, Rake-tales, and ſuch like. *Branches* of three or four Years *Growth*, about twelve Foot in length, being ſet near two Foot deep in the Ground in *February*, about fifteen Foot aſunder, will ſoon make handſome *Trees*, which will bear *Lopping* every fifth Year; theſe love wet Ground, and will not be made to proſper in any other. I might add, that this, and ſeveral other ſorts of *Willow* might be rais'd from *Seeds* which grow on the *Female Juli*, if we *ſow* them in wet boggy Ground, as is practiſed in *France* and other Countries.

The *Alder*, more than all other *Trees* beſide, delights in *Boggy Places*, and may be cultivated in the coldeſt wet Grounds. This *Amphibuous Plant* is beſt raiſed from *Truncheons* or *Branches* about three Foot in length, ſetting them about *February* a Foot deep in the Ground; they thrive exceedingly on the Banks of Rivers, and will make ſuch *Shoots* in three or four Years time, as may be then cut and ſold to good Advantage for *Poles* and other Uſes; it is a laſting *Wood* if it lie continually under Water, and if we believe *Joſ. Bauhinus*, will in courſe of time turn to *Stone*, but if it be expoſed ſo as to be ſometimes wet and ſometimes dry, it is of no Duration. This *Plant* is alſo raiſed from *Seeds* in *Flanders*, where they make great Profit of it.

Thus have I given a ſhort View of the ſeveral ſorts of *Trees* which I would recommend to be planted for *Timber* and *Underwood*; I have endeavour'd to aſcertain the ſeveral *Soils* and *Situations* proper to each of them, which I hope may be of ſome uſe, for that in the Quantity of an Acre of Ground we frequently find *Earths* of very different *Qualities*, to any of which, one or other of the *Trees* I have named may be allotted. And now as I ſuppoſe, that every Gentleman who is about to make a *Plantation*, will certainly make it upon his own *Land*, or at leaſt on ſuch a Parcel of Ground as will by right be continued after his Demiſe in his Family, it is reaſonable enough to believe, that ſuch Perſons may have upon their Eſtates ſome *Timber* already growing, ſome *Trees* proſpering, others decaying: Now I ſay it would ſurely be good Husbandry to fell ſuch *Trees* as began to decline, either from too great Age, or too near Neighbourhood with others.

To the firſt, I can pretend to give no other Direction than to have them cut down at the proper *Seaſon*; but to the ſecond, (*i. e.*) where they grow too cloſe together, leave the moſt thriving *Trees* to grow and improve themſelves, and cut up the others *Root* and *Branch*, leaving convenient Diſtances between the *Trees* which remain ſtanding, which ought to be only ſuch as have their *Tops* or leading *Shoots* proſperous and in good order. Our Countryman *Lawſon*, who had for above 40 Years ſtudy'd the Improvement and Management of *Woods* and *Timber-Trees*, has given us a very good Leſſon concerning the *dreſſing* and *cleaning* of *Woods*, which being ſhort, and much to the purpoſe, I ſhall inſert in his own Words.

" How many *Forreſts* and *Woods*,
" wherein you ſhall have for one *thriving*
" *Tree*, four (nay ſometimes twenty four)
" *evil thriving*, rotten and dying Trees,
" even while they live; and inſtead of
" *Trees*, thouſands of *Buſhes* and *Shrubs*!
" What *Rottenneſs*, what *Hollowneſs*, what
" *dead Arms*, *wither'd Tops*, *curtail'd*
" *Trunks*, what loads of *Moſs*, *drooping*
" *Boughs*, and *dying Branches* ſhall you
" ſee every where, and thoſe that are in
" this ſort, are in a manner all unprofitable
" *Boughs*, canker'd *Arms*, crooked, little
" and ſhort *Boals*. What an infinite Num-
" ber of *Buſhes*, *Shrubs*, and Skrags of
" *Haſels*, *Thorns*, and other unprofitable
" *Wood*, which might be brought by dreſ-
" ſing to become great and goodly Trees!
" Conſider now the Cauſe.

“ The *leſſer Wood* hath been ſpoiled
“ with careleſs, unſkilful, and untimely
“ *Stowing*; and much alſo of the *great*
“ *Wood*. The *greater Trees* at their firſt
“ riſing have fill'd and overladen them-
“ ſelves with a Number of *waſtful Boughs*
“ and *Suckers*, which have not only drawn
“ the *Sap* from the *Boal*, but alſo have
“ made it knotty, and themſelves and
“ the *Boal* moſſy for want of *Dreſſing*;
“ whereas, if in the prime of *Growth* they
“ had been taken away cloſe all but one
“ *Top*, and clean by the *Bulk*, the Strength
“ of all the *Sap* ſhould have gone to the
“ *Bulk*, and ſo he would have recover'd
“ and cover'd his *Knots*, and have put
“ forth a fair, long, and ſtreight *Body* for
“ *Timber* profitable, huge great of *Bulk*,
“ and of infinite Laſt.

“ If all *Timber Trees* were ſuch (will
“ ſome ſay) how ſhould we have crooked
“ Wood for *Wheels*, *Coorbs*, &c?

“ *Anſwer*, Dreſs all you can, and there
“ will be enough *crooked* for thoſe Uſes.

“ More than this, in moſt Places they
“ grow ſo thick, that neither themſelves
“ nor *Earth*, nor any thing under or near
“ them can thrive, nor *Sun* nor *Rain* nor
“ *Air* can come at them.

“ I ſee a Number of *Hags*, where out
“ of one *Root* you ſhall ſee three or four
“ (nay more, ſuch is Men's unſkilful

" greedineſs, who deſiring many, have
" none good) pretty *Oaks* or *Aſhes* ſtreight
" and tall; becauſe the *Root* at the firſt
" *Shoot* gives *Sap* amain: But if *One* only
" of them might be ſuffer'd to grow, and
" that well and cleanly pruned all to his
" very *Top*, what a *Tree* ſhould we have
" in time, and we ſee by thoſe *Roots* con-
" tinually and plentifully ſpringing, not-
" withſtanding ſo deadly wounded, what
" a Commodity ſhould ariſe to the *Owner*
" and the *Commonwealth*, if Wood were
" cheriſh'd and orderly dreſs'd. The waſte
" *Boughs* cloſely and ſkilfully taken away,
" would give us ſtore of *Fences* and *Fuel*,
" and the *Bulk* of the *Tree* in time would
" grow of huge length and bigneſs.

And now from what has been ſaid relating to the Cleanſing, Dreſſing and Pruning of *Woods*, two Things naturally offer to the Benefit of the Proprietors: *Firſt*, That the Profit which will accrue from the Fall of diſtemper'd and decaying *Timber* and *Underwood*, will afford a Sum of Money ſufficient to make large *Plantations*: And, *Secondly*, the *Trees* which remain ſtanding after this Weeding is perform'd, will grow and proſper exceedingly, by being then at liberty to receive a greater quantity of *Nouriſhment* from the *Earth*, and by enjoying ſuch a Proportion of *Air* as their Age and Strength will require.

CHAP.

CHAP. V.

The Method of Planting an Acre of Ground *with* TIMBER-TREES *and* UNDER-WOOD; *with the* Profits *which will ariſe from that* Plantation *in nine Years, ſeventeen Years, and twenty five Years after* Planting.

IF we conſider the many Advantages this Nation in general has receiv'd from the *Timber* of its own *Growth*, how by its powerful Fleets (the Off-ſpring of its *Oaks*) *England* has gain'd the Dominion of the Seas, and now enjoys the Benefits of an Univerſal Commerce; without mentioning the Advantages it affords to every particular Owner of it: It is wonderful to me, that the propagating of *Timber*, a Commodity ſo valuable and ornamental, ſhould be ſo little encouraged now-a-days among us, when our natural *Store* is ſo near being conſumed, that to all appearance in a few Years time, we may be forced to ſeek it in foreign Countries.

Now, if I may be allow'd to judge in this Caſe, I conceive that the preſent Decay of our Timber may depend upon one or other of the following Reaſons.

Firſt, That the making New Plantations will be an immediate Expence to us: Or,

Secondly, that we cannot hope to reap any Profit to our ſelves from ſuch *Plantations* as might be made in our *times*; or elſe,

Thirdly, That many Gentlemen who are already Maſters of *Woods*, receive little *Profit* from them for want of due Care and Management.

The firſt and laſt of theſe Objections are anſwer'd, I think, in the foregoing Chapter, where the Advantages of Cleaning and Dreſſing of *Woods* are ſet down; in that not only *Money* is provided thereby to anſwer the Expence of *New Plantations*, but alſo the ſtanding *Trees* will be put into a thriving Condition.

It remains now for me to anſwer the other Objection, *viz.* That we cannot propoſe to reap any *Profit* to our ſelves from the *Plantations* which might be made by us. But I hope the Method which I ſhall herein propoſe, will give full Satisfaction to that Point.

For which end I would recommend that every *Plantation* which ſhall be made either in this preſent Age or hereafter, may conſiſt partly of *Forreſt* or *Timber-Trees*, and partly of *Coppice* or *Underwood.*

Now the *Underwood* which I propoſe to be planted and intermix'd among the *Timber-Trees* or *Standards*, may be cut in eight or nine Years after Planting, and ſo from time to time every eighth Year will produce a very conſiderable Return, as will appear hereafter in a ſtated Account.

Secondly, The *Plants* for *Underwood*, which will encompaſs on every Side the young *Timber-Trees*, will not only ſhelter them from Blaſts of Wind which might be hurtful to them, but will alſo (by keeping off the circum-ambient Air) draw them into ſtrait and tall *Trees*, 'till they can ſhift for themſelves, and are ſtrong enough to bear the Severity of the Weather.

But to proceed, let us make choice of ſuch Ground to plant upon, as may not be thought proper for Corn, or at leaſt ſuch as will yield only a poor Crop of Grain. I ſuppoſe ſuch Land will be worth about five Shillings *per* Acre by the Year, and by all Means let it be, if poſſible, near ſome Navigable River, for the greater Eaſe and Cheapneſs of Carriage. Now as I have before hinted, that as the Land is, ſo muſt we allot the proper *Plant* for it, I only wiſh it may be deep enough to nouriſh the *Oak* and *Ilex*, which are *Tap-rooted Plants*, and therefore delight in deep Soil.

Suppoſing then we are fortunate enough to meet with an Acre of Ground proper for *Oaks*, we muſt firſt encompaſs it with a good Fence, and then either dig or plough the Land at a proper Seaſon, to lie Fallow for ſome time, 'till the *Turf* be mellow'd and fit for our Purpoſe.

An *Acre* of Ground contains 160 Square *Perch* or *Rods*, each Rod being 16 Foot and a half. This Quantity of Land muſt be fenced about with a Ditch ſix Foot wide, three Rows of *Quickſetts* planted upon the Sides of its Banks at a Foot Diſtance from each other, and a dry Hedge on the Top.

A Labouring Man, working for *one Shilling per diem*, may prepare nine Foot of the Ditch in length in one Day, and cut Stakes and Buſhes, and make about five *Rod* of the dry Hedge in a Day, ſo that he may prepare the Hedge, make the Ditch, plant three Rows of *Quickſetts*, and pay the Expence of them after the Rate of *two Shillings per* Hundred, for about *three Shillings* the *Perch*; ſo will the whole Charge of making a Fence about an *Acre* of Land be *Seven Pounds Sixteen Shillings*; but we may fence in two *Acres* of Land after the ſame Rate, being 32 Perch long, and ten Perch wide, for *nine Pounds ſix Shillings*, for the ſame Reaſon that if *one Hundred Hurdles* will hold a *thouſand* Sheep, *two Hurdles* added to them will fold *two thouſand* Sheep; that is, if the Sheep Pen has 49 *Hurdles* on each Side, and *one* at each End, it juſt contains half the Quantity of Ground that it would do, if it had the Breadth of *two Hurdles* at the Ends. *N. B.* A *Pole* or *Perch* planted with three Rows of *Quickſetts* will take up about 48 *Plants*, ſo will there be required to plant about an *Acre* 2496 *Plants.*

Thus having provided a good Fence to defend our young *Plantation* from Dangers of Cattle and other Inconveniencies, the next thing to be done, is to prepare the encloſed Land for *Planting*, which may be perform'd ſeveral Ways.

Suppoſing the Land to be encumber'd in the worſt Manner with *Buſhes*, *Whinns*, or *Furze*, &c. ſo that a Plow cannot be uſed upon it, then may it be dug and clean'd for about *ſix Pence* the ſquare *Pearch*; the whole *Acre*, if it be dug at that rate, will come to *four Pounds.* But if the Ground ſhould happen to be in that State that a Plough can work in it, an *Acre* may be plow'd for about *twelve Shillings.*

The Land being thus prepared, one *Acre* will contain forty Plants of *Oak* at 33 Foot Diſtance, and as I have hinted before, that all *tap-rooted* Trees are endanger'd by removing, and that when they are *tranſplanted* they ſeldom come to the Perfection of thoſe which are raiſed from *Seed*, and remain always in the ſame place; I ſhall therefore recommend that forty *Beds* of good Natural *Soil* be prepared on the *Acre* of Land at the aforeſaid Diſtance of 33 Foot from each other, and that in each *Bed* five or ſix *Acorns* be planted about four Inches deep in *February*, which Seaſon I chuſe rather than *Autumn*, becauſe the over-wet of ſome Winters might rot the Seeds, or *Mice*, *Squirrels*, and ſuch like Animals might deſtroy them.

Theſe forty *Beds* may be well prepared by one Man in three Days, at *one Shilling per Diem*, two hundred *Acorns* may be worth about *ſix Pence*, and the planting of them be worth about *ſix Pence* more, which makes in all *four Shillings*.

The *Acre* of Land being thus ſown with *Oaks*, we may interſow the remaining part of the Ground with *Aſh-Keys* which have been kept the Winter in dry Sand, theſe will turn to very good account for *Underwood*, and the Land is already dug or plow'd for our purpoſe.

One Buſhel of *Aſh Keys* may be worth *two Shillings*, the ſowing them *one Shilling*, and the Harrowing the Ground after Sowing will be worth *five Shillings* more, in all *eight Shillings*. When the *Oaks* and *Aſhes* are come up, they muſt be hough'd and cleans'd from Weeds. One Man may do this Work in three Days, leaving the Diſtance of three Foot between the *Aſhen Plants*; the Expence of this weeding will be *three Shillings*; for I rate a Man's Work at *one Shilling per Diem*, becauſe I ſuppoſe ſuch *Plantations* will only be made in thoſe Places where Land is cheap, and conſequently every thing elſe is valuable in Proportion.

The ſecond Year we may draw ſome of the young *Oaks*, leaving a ſingle *Plant* in each *Bed*; now it is likely that all the *Acorns* which were put into the Ground, may not come up, therefore I would adviſe, as the ſureſt way to have our Expectations anſwer'd from the *Seeds* we ſow, to try the Goodneſs of them before they are ſown, which may be done by putting them in Water, and planting only thoſe which ſink quickly to the Bottom.

An *Acre* of Land thus *fenced*, *dug*, *cleanſed* and *planted*, comes to *twelve Pounds* and *elven Shillings*, and *two Acres* dreſſed and planted in like manner will coſt *eighteen Pounds ſixteen Shillings*.

But if the Land be clean enough to admit the Plow, then the Charge of *fencing*, *planting*, &c. of one *Acre*, will be *nine Pounds three Shillings*, and the Expence of *two Acres* dreſs'd in the ſame Manner, *twelve Pounds*.

In nine Years after this *Plantation* has been made, the *Aſh Plants* will be fit to cut for *Poles* or *Hoops*, worth upon the Place *ten Shillings per Hundred*: If the *Plants* ſtand at a Yard diſtance from each other, the *Acre* of Land will then contain about 4800 *Plants*, which may be ſold for *twenty four Pounds*. The *Quickſet* Fence muſt likewiſe be cut down, and will yield about ten Load of Buſhes, we will ſuppoſe them only worth *five Shillings per* Load; altho' near *London* they ſell for four times as much.

The whole Charge of *fencing*, *digging* and *planting* an *Acre* of Land with *Oaks* for *Timber*, and *Aſh* for *Underwood*, with the Profit of the firſt nine Years *Growth*, may be ſeen in the following Account.

Account of the nine Years after Planting, or Firſt Cutting.

	l.	s.	d.		l.	s.	d.
Expence of fencing, digging and ſowing an *Acre* of Land for *Timber* and *Underwood*,	12	11	0	Received for 4800 *Aſhen Poles*, at 10 *Shillings per hundred*,	24	0	0
Intereſt of the aforeſaid Sum for 9 Years at 5 *per Cent.*	5	12	6	Receiv'd more for 10 Load of Buſhes, at 5 *Shillings per* Load,	2	10	0
Rent of the Land for 9 Years, at 5 Shillings *per Acre per Annum*,	02	05	0	Nine Years Gain,	26	10	00
For cutting 4800 *Aſhen Poles*, one Man 5 Days at *one Shilling per Diem.*	0	05	0	Nine Years Expence,	20	13	06
9 Years Expence,	20	13	6	Neat Profit of the *Plantation* in 9 Years,	5	16	06

After this Cutting we may cut again in eight Years time, and expect 4 or 5 Poles on each *Aſhen Plant.*

Account of the 17 Years after Planting, or Second Cutting.

	l.	s.	d.		l.	s.	d.
Rent of the Land for 8 Years at 5 *Shillings per Annum.*	2	0	0	Receiv'd for 19200 *Aſhen Poles*, at ten *Shillings per hundred*,	96	0	0
Expence of Cutting 19200 *Aſhen Poles* (reckoning four to each Plant) one Man 20 Days at *one Shilling per Diem*,	1	0	0	Receiv'd more for 10 Load of Buſhes at 5 *Shillings per* Load,	02	10	0
17 Years Expence,	3	0	0	Gain'd clear of Expences by the firſt Cutting,	05	16	06
				The Intereſt which might be gain'd on 5*l.* 16 *s.* 6 *d.* in eight Years at five *per Cent.* is about	02	06	0
				17 Years Gain,	106	12	06
				17 Years Expence,	003	00	00
				Neat Profit of the *Plantation* in 17 Years after Planting,	103	12	06

Account

Account of the twenty five Years after Planting, or Third Cutting.

	l.	s.	d.
Rent for 8 Years, at 5 *Shillings* the *Acre per Annum*,	02	00	0
Expence of Cutting 19200 *Aſhen Poles*, one Man 20 Days at one *Shilling per diem*.	01	00	0
25 Years Expence.	3	00	0

	l.	s.	d.
Receiv'd for 19200 *Aſhen Poles* at 10 *Shillings per Hundred*:	096	00	0
Receiv'd for ten Load of Buſhes at five *Shillings per* Load.	002	10	0
Gain'd clear of Expences by the ſecond Cutting.	103	12	6
The Intereſt which might be gain'd on the aforeſaid Sum in 8 Years at 5 *per Cent.*	041	08	0
25 Years Gain.	243	10	6
25 Years Expence.	003	00	00
Neat Profit of the *Plantation* in 25 Years	240	10	06
To which we may add the Value of the 40 *Oaks* then growing in the ſaid *Plantation*, worth 10 *Shillings per Tree.*	20	00	00
In all.	260	10	06

By the foregoing Account, we find that an *Acre* of Land, planted as I direct, may produce the Sum of 260 *l.* 10 *s.* 6 *d.* in the ſpace of *twenty five Years*, clear of all Expences of Planting, and Value of the Land, and the *Oaks* if they are ſtill continued growing, will yet produce a more conſiderable return to the *Owner*, or his *Family* after him.

By the Example of this *Plantation*, others may be made with different Kinds of *Trees*; and if the Planter has a due regard to the *Soils* proper to what he deſigns to plant, he may expect a Return for his Labour and Induſtry anſwerable to what I have mentioned in this Account, and if his Ground happens to be already *fenced* for his Purpoſe, and is capable of admitting a Plough upon it, he may yet reap a much more conſiderable Profit from his *Plantation.*

I ſhall now conclude this Treatiſe wirh acquainting my Reader with what he is to expect in the ſecond Part; I purpoſe in that to treat of every thing (ſo far as my Experience will permit) which may tend to the Improvement of the *Parterre* or *Flower-Garden*; wherein I ſhall firſt give the Explanation of a new Invention, for the more ready deſigning and laying out of *Garden-Plats*, by which *Inſtrument* it will be poſſible to produce more Variety of *Figures* for *Gardens* in an Hour's time, than we can find in all the printed Books now extant: I ſhall then give my Reader the beſt Methods of raiſing and propagating all ſorts of Flowers: And laſtly, endeavour to preſcribe ſuch Rules for the adorning of *Gardens*, as may make them delightful in every Month of the Year. And now that this Work may be the more compleat, I de-

To the Right Honourable

Thomas Lord *Parker*,

Baron of *Macklesfield* in the County Palatine of *Cheſter*, Lord Chief Juſtice of *England*, and one of His Majeſty's moſt Honourable Privy-Council.

My LORD,

YOur Lordſhip having been pleas'd to think favourable of my firſt Book upon this Subject, I have preſum'd to Inſcribe this

Part to YOU, not without Belief that the World will be inclined to hope better from me, when they find my Studies influenced by ſo Great a Patronage.

It is not only from Your Lordſhip's Inclination to the Subject of theſe Papers, of which none can be a better Judge than your Self, that you are not offended with any thing of this kind, but that you know a due Cultivation of theſe innocent Pleaſures, will both improve our Underſtanding, and better our Morals.

The Temptations to Vice are always taken off in Proportion to the Employments of thoſe Minutes which are by many ſpent in Idleneſs; and the vitious and litigious Part of Mankind, whom Your Lordſhip's juſt Awards correct, would be much leſſened, if Recreations of this Nature took up more of the Time of thoſe who have an Opportunity of ſpending it in Gardens.

I avoid, my Lord, ſpeaking in the common Way of Dedicators, being certain that nothing can more offend YOU, than a Recital of Your own Praiſes If any thing in theſe Papers can be but the Entertainment of one half Hour of Your Lordſhip's in Your Retirement from the Sphere of Publick Buſineſs, it is the utmoſt Ambition of,

May it pleaſe your Lordſhip,

Your Lordſhip's

moſt Devoted, Humble Servant,

R. BRADLEY.

PREFACE.

THE firſt Part of my Book having met with a favourable Reception from the Publick, and many Perſons of Quality and Honour, having been pleas'd to ſend me their Obſervations on this Subject, my firſt Acknowledgment is due to them; and as their Remarks are very Curious, I promiſe to Inſert them in proper Places of this Work. Information is always welcome to me, and Cavils I ſhall not mind, tho' I have not a few from the Quarter from whence I preſaged, but have had the Good Luck to have the moſt Objections, from the moſt Ignorant.

My Deſign in this ſecond Part I will propoſe to my Reader in the ſame manner as I did in the former, and give him a general View of what he is to expect in the Enſuing Sheets.

In the firſt place, my Reader will find the Deſcription, and Uſe of my Invention for the more ſpeedy Drawing or Deſigning of Garden-Plats; and I am of Opinion, that when he once underſtands the right Uſe of it, I ſhall have his Thanks for that Diſcovery.

I have then given the beſt Method of Propagating and Introducing all the Ornaments of a Garden, as *Evergreens*, *Flowering Shrubs*, *Per-annual*, and *Annual Flowers* and *Bulbous-rooted Plants*; with their different Heights, Beauties, and times of Flowering. By theſe means a Garden may have always ſomething entertaining in it, while a Succeſſive Scene of Delight is kept up by a due regard to the peculiar Seaſons of each Flower.

There is one Particular which relates to this Subject that could be no where ſo well introduced as here, *i. e.* the General Irregularity and Inconſiſtency of dead Ornaments in Gardens. I ſhall only hint at a few. *Iron-Works* are often placed where there are no Proſpects. We ſee many large *Statues* in ſmall Gardens, and a few ſmall ones in large Gardens. The miſplacing of Ornaments in Gardens is another Fault, which is ſometimes ſo abſurd as to equal the miſmanag'd Picture in *Horace*.

> *Delphinum* Silvis *appingit*, *Fluctibus*
> Aprum.

Thus we view a *Neptune* in a *dry Walk*, and a *Vulcan* in the middle of a *Fountain*.

Theſe are ſo ſhocking to common Senſe, that I think it ſufficient only to take a curſory Notice of them to make them avoided.

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SINCE the Inſtrument I now deſign to treat of has afforded ſome Pleaſure to many of my Acquaintance, I have been eaſily perſwaded to make it publick. It is of that *Nature*, that the beſt Deſigners or Draughts-Men may improve and help their Fancies by it, and may with more certainty hit the Humour of thoſe Gentlemen they are to work for, without being at the trouble of making many Varieties of *Figures* or *Garden-Platts*, which will loſe time, and cauſe an unneceſſary Expence, which frequently diſcourages Gentlemen from making up their Gardens. In ſhort, the Charge of the *Inſtrument* is ſo ſmall, and its Uſe ſo delightful and profitable, that I doubt not its favourable Reception in the World.

But to proceed: We muſt chuſe two Pieces of *Looking-glaſs* of equal bigneſs, of the Figure of a long Square, 5 Inches in length, and 4 in breadth; they muſt be cover'd on the Back with Paper or Silk, to prevent rubbing off the Silver, which would elſe be too apt to crack off by frequent Uſe. This Covering for the Back of the *Glaſſes* muſt be ſo put on, that nothing of it may appear about the Edges on the bright Side.

The *Glaſſes* being thus prepared, they muſt be laid Face to Face, and hinged together, ſo that they may be made to open and ſhut at pleaſure, like the Leaves of a Book; as for *Example*, the firſt *Figure* ſhows us the Backs of the two *Glaſſes*, *A* and *B*, join'd together by Hinges *C C* and *D D*, ſo that they may be open'd or ſhut to any part of a Circle; and now the *Glaſſes* being thus fitted for our Purpoſe, I ſhall proceed to explain the Uſe of them.

Draw a large Circle upon Paper, divide it into three, four, five, ſix, ſeven or eight equal Parts, which being done, we may draw in every one of the Diviſions, a Figure at our Pleaſure, either for *Garden-Platts* or *Fortifications*; as for *Example*, in the ſecond *Figure* we ſee a Circle divided into ſix Parts, and upon the Diviſion, mark'd *A*, is drawn part of a Deſign for a *Garden.* Now to ſee that Deſign entire, which is yet confuſed, we muſt place our *Glaſſes* upon the Paper, and open them to the ſixth part of the Circle, *(i. e.)* one of them muſt ſtand upon the Line *b* to the Center, and the other muſt be open'd exactly to the Point *c*, ſo ſhall we diſcover an entire *Garden-Platt* in a circular Form (if we look into the *Glaſſes*) divided into ſix Parts, with as many Walks leading to the Center, where we ſhall find a Baſon of an *Hexagonal Figure.*

We may more plainly ſee how the *Glaſſes* ought to be placed upon the Deſign, by viewing the third *Figure.* The Line *A*, where the *Glaſſes* join, ſtands immediately over the Center of the Circles, the Glaſs *B* ſtands upon the Line drawn from the Center to the Point *C*, and the Glaſs *D* ſtands upon the Line leading from the Center to the point *E*; the *Glaſſes* being thus placed, cannot fail to produce the compleat *Figure* we look for; and ſo whatever equal part of a Circle you mark out, let the Line *A* ſtand always upon the Center, and open your *Glaſſes* to the Diviſion you have made with your Compaſſes. If, inſtead of a Circle you would have the Figure of a *Hexagon*, draw a ſtreight Line with a Pen from the Point *c* to the Point *d* in the ſecond *Figure*, and by placing the *Glaſſes* as before, you will have the *Figure* deſired.

So likewiſe a *Pentagon* may be perfectly repreſented, by finding the fifth Part of a Circle, and placing the *Glaſſes* upon the *Out-lines* of it; and the fourth Part of a Circle will likewiſe produce a Square by means of the *Glaſſes*, or by the ſame Rule will give us any *Figure* of equal Sides. I eaſily ſuppoſe that a curious Perſon by a little Practice with theſe *Glaſſes* may make many Improvements with them, which perhaps I may not have yet diſcover'd, or have for Brevity ſake omitted to deſcribe.

It next follows that I explain how by theſe *Glaſſes* we may from the Figure of a *Circle* drawn upon Paper make an *Oval*; and alſo by the ſame Rule repreſent a long *Square* from a perfect *Square*. To do this, open the *Glaſſes* and fix them to an exact *Square*, place them over a Circle and move them to and fro 'till you ſee the Repreſentation of the Oval Figure you like beſt; and ſo having the Glaſſes fix'd in like manner, move them over a ſquare piece of Work 'till you find the Figure you deſire of a long *Square.* In theſe Tryals you will meet with many Varieties of Deſigns: As for Inſtance, the fourth *Figure*, altho' it ſeems to contain but a confuſed Repreſentation, may be varied into above 200 different Repreſentations by moving the *Glaſſes* over it, which are open'd and fix'd to an exact *Square.* In a Word, from the moſt trifling Deſigns we may by this Means produce ſome thouſands of good Draughts.

But that the fourth *Figure* may yet be more intelligible and uſeful, I have drawn on every Side of it a Scale divided into equal Parts, by which Means we may aſcertain the juſt Proportion of any Deſign we ſhall meet with in it.

I have alſo mark'd every ſide of the fourth *Figure* with a Letter, as *A*, *B*, *C*, *D*, the better to inform my Reader of the Uſe of the Invention, and put him in the way to find out every Deſign contain'd in that *Figure.*

Example I. Turn the ſide *A* to any certain Point, either to the *North*, or to the Window of your Room, and when you have open'd your *Glaſſes* to an exact *Square*, ſet one of them on the Line of the ſide *D*, and the other on the Line of the ſide *C*, you will then have a ſquare *Figure* four times as big as the engrav'd Deſign in the Plate; but if that Repreſentation ſhould not be agreeable, move the *Glaſſes* (ſtill open'd to a *Square*) to the Number 5 of the ſide *D*, ſo will one of them be parallel to *D*, and the other ſtand upon the Line of the ſide *C*, your firſt Deſign will then be vary'd; and ſo by moving your *Glaſſes* in like manner from Point to Point, the Draughts will differ every Variation of the *Glaſſes*, 'till you have diſcover'd at leaſt fifty Plans differing from one another.

Example II. Turn the ſide mark'd *B*, of the fourth *Figure*, to the ſame Point where *A* was before, and by moving your *Glaſſes* as you did in the former Example, you will diſcover as great a Variety of Deſigns as had been obſerv'd in the foregoing Experiment; then turn the ſide *C* to the place of *B*, and managing the *Glaſſes* in the manner I have directed in the firſt Example, you may have a great Variety of different Plans, which were not in the former Tryals; and the fourth ſide *D* muſt be managed in the ſame manner with the others; ſo that from one Plan alone, not exceeding the Bigneſs of a Man's Hand, we may vary the *Figure* at leaſt two hundred times, and ſo conſequently from five *Figures* of the like Nature, we might ſhew about a thouſand ſeveral ſorts of *Garden-Platts*; and if it ſhould happen that the Reader has any Number of Plans for *Parterres* or *Wilderneſs* Works by him, he may by this Method alter them at his Pleaſure, and produce ſuch innumerable Varieties, that it is not poſſible the moſt able Deſigner could ever have contrived.

And ſeeing I have given ſuch Directions in this Chapter, as I hope may inform the Curious of the Uſe of this new invented Inſtrument, I think it may not be improper to advertiſe, that the Publiſher of theſe Papers is provided with *Glaſſes* of ſeveral Sizes ready fitted up for the Experiment at the following Prices; the ſmall ſort at 3 Shillings, and the other at 5 Shillings.

CHAP. II.

Of EVER-GREENS, *their Culture and Uſe in Gardens.*

I Am in this Chapter to ſpeak of the Culture of *Ever-greens*, and their Uſe in Gardens. They are ſo ornamental where they are rightly managed, that I think no Garden can be compleat without 'em; they make beautiful and uſeful Hedges, and in ſingle *Plants*, when they have been order'd by a curious and skillful Hand, they are ſo many growing Monuments of the Art of Gardening. But to come to Particulars, the *Ever-greens*, which are commonly propagated by the Gardeners, are *Hollys*, *Yews*, the *Laurus-tinus*, *Bay*, *Box*, *Laurel*, *Philarea*, *Alaternus*, *Juniper*, *Piracantha*, *Ilex*, *Arbutus*, and the *Ever-green Privet*. Theſe have every one their proper Places in Gardens, with reſpect to their ſeveral Stages of *Growth*. Some of them may be kept in Shape and Compaſs with very little trouble, while others are too apt to out-grow the Care of the Gardener, let him be never ſo vigilant.

SECT. I.

Of the HOLLY.

TO conſider theſe ſingly, I ſhall begin with the *Holly*, which is in my Opinion the moſt beautiful of all the reſt. It will grow to a very large Tree. I have ſeen *Plants* of this Kind above ſixty Foot high in the *Holly*-Walk near *Frenſham* in *Surry*, in which Place they delight extreamly: The *Soil* is dry, rather inclining to *Sand* than *Loam*: The *Holly* is a *Tap-rooted Plant*, and therefore does not love tranſplanting, unleſs the Roots have been often prun'd in the Nurſery by digging about it, which a careful Gardener will frequently do, that they may riſe with a Ball of Earth when they are to be removed; but yet notwithſtanding all his Care, it is adviſeable to plant them in Baskets ſo ſoon as they are taken up, that the Earth which riſes with the *Roots* may not break or fall from them in the Carriage from one Place to another: The Baskets they are planted in, muſt be ſet with them in the Places where they are to remain, and will rot in a few Months, and not any ways hinder the Trees from drawing the Nouriſhment they require from the adjacent Earth, which ſhould be natural Soil (without the leaſt Mixture of *Dung*) and cannot well be too barren. The Removal of this Tree ought to be rather in *September* than towards the Spring, to ſave the trouble of watering, which oftentimes puts the Gardener to great Charge and Inconveniency. The *Berries* of this *Plant* when they are ripe ſhould be gather'd, and after being laid to ſweat for ſome time, may be put in *Sand* or *Earth*, S. S. S. 'till the *Autumn* following, when they may be ſown in the Nurſery-Beds. Now as theſe will lye in the Ground for a long time before they begin to ſpring, I would adviſe the following Method to be made uſe of in order to forward their *Germination*, and thereby to gain a Year at leaſt in their

Growth. I have obſerv'd that *Seeds* or *Berries* of this Kind which have been eaten by Fowls and paſs'd thro' their Bodies, have began to vegetate ſoon afterwards; we have therefore no more to do than to contrive a Mixture which ſhall have in it a Heat and Moiſture reſembling that in the Bodies of Birds, and to lay the *Seeds* in it for a few Days before we ſow them, which will anſwer the End we deſire: For this Purpoſe therefore provide a Buſhel of *Bran*, in which after having mix'd your *Seeds* or *Berries*, wet the whole very well with Rain or Pond-Water, and let your *Preparation* remain for ten Days without any Diſturbance in a Veſſel of Wood or Stone. About three Days after the Mixture has been prepared it will begin to heat, and ſo continue to ferment for 30 or 40 Days, if it be carefully ſprinkled from time to time with warm Water as it begins to dry. The Heat of this wet *Bran* will prepare the *Berries* mix'd with it, and put them into a vegetable Poſture in about a Week's time after the Ferment has began, and then may be ſown in the Nurſery. For this new-invented artificial Heat I am beholden to the incomparable Sir *Iſaac Newton*, to whom every Art is greatly obliged.

The young *Stocks*, which may be thus rais'd from the *Berries*, will be fit to graft on, or be inoculated at four or five Years *Growth*, if they are deſign'd to be train'd up for Ornament of our Garden. The *Grafting* muſt be done in *March*, and the *Inoculating* or *Budding* in *July*; but otherwiſe if they ſhould be made uſe of for *Standard-Trees*, or *Hedges*, let them be planted at their proper Diſtances while they are very young, that they may the better accuſtom themſelves to the *Soil* they are to grow in. *Bird-lime* is made of the *Bark* of this *Tree* gather'd about *Midſummer*, boil'd about twelve Hours in Spring Water 'till the *Green Bark* ſeparates from the others; the *Green* muſt then be laid in a cool Place and cover'd with *Weeds* or *Fern* for a Fortnight, or 'till it become a *Mucilage*, then beat it in a ſtone Mortar, 'till it be a tough Paſte, and waſh it well in ſome running Water, and then putting it in an earthen Veſſel to ferment and purge it ſelf for four or five Days, waſh it for the ſecond time, and put it into a freſh Pipkin, adding to it one third part of *Gooſe-Greaſe* well clarified, incorporate them on a gentle Fire, ſtirring your Compoſition 'till it be cold, and keep it in Urine for your Uſe.

Mr. *Evelyn* commends the *Holly* above all other *Plants* for *Hedges* and ſtrong

Fences; and indeed was it not for the Benefit of *Wall-Fruit*, I ſhould prefer a thick well grown *Holly*-Hedge before any Wall that could be built, the beautiful *Green* of their armed *Leaves*, and the vermilian Colour of their *Berries*, afford a moſt agreeable Proſpect in every Month of the Year, and diſdain the rudeſt Attacks of the Weather, Cattle, *&c.*

Having now ſet down what I think is the moſt material relating to the common or plain-leav'd *Holly*, I am to give ſome Account of the variegated Sorts of *Hollies* which are ſo much eſteem'd by the Curious, and contribute to the Ornament of our Gardens. Of theſe we have about twenty different Kinds, which are diſtinguiſh'd from one another by the Names of thoſe who firſt diſcover'd them. It would be troubleſome to relate them here, and would be of very little Service to my Reader, ſince in the whole Catalogue of them it would be impoſſible to diſcover the Beauty or Imperfections of any one among them; let it ſuffice that every Gentleman pleaſe himſelf, rather by examining them in the Nurſeries, of which there are ſo many about *London*. I ſhall only here take Notice that there are three ſorts of *Stripes* in *Vegetables*, thoſe whoſe Leaves are edged with Cream Colour, thoſe edged with Yellow, and the bloach'd Sorts, as the Gardeners call them : And it is a certain Rule, that whatever Plant has its *Leaves* edged about with theſe diſtemper'd Colours will always remain Variegated, without putting forth ſo much as one plain *green Leaf*; and on the other hand, ſuch Plants as have their *Leaves* bloach'd, tinged or ſpotted in the middle, will ſeldom remain ſtrip'd, if they be planted in good Ground, but from time to time will ſhoot out Branches entirely Green, and at length loſe all their other Colours; from whence we may obſerve that the Sap, when it appears diſcoloured only towards the middle of the *Leaf*, is not then ſo much diſtemper'd, but that it may be reſtor'd by wholſome Nouriſhment, but that when the tinged Sap has reach'd the extream parts of the *Leaves*, ſo much Venom is then mix'd with it, that it is impoſſible to overcome it by any means, and even the *Fruit*, which is certainly fed with the moſt refin'd *Juices* of the Plant, is alſo equally corrupted with the ſame Poiſon, as its Stripes plainly ſignify.

Another Obſervation relating to ſtrip'd Plants is, that when a Plant begins to bloach, a skilful Gardener may provoke the Poiſon which begins to tinge the *Leaves*, and by checking the Nouriſhment of the Plant, and giving it unwholſome

ſome Diet, may by degrees unvenom the whole, and produce what they call an *Edger*, *i. e.* a Plant whoſe *Leaves* are edged with White or Yellow. Again, there is another Experiment relating to this Caſe, which is very well worth our Notice; it was made and communicated to me by Mr. *Furber* a curious Gardener and Nurſery-Man at *Kenſington*; he made many Plants of the Common *Jeſſamine* with edged *Leaves*, upon which he engrafted Cions of the *Spaniſh Jeſſamine*, whoſe *Leaves* had not been known to ſtripe; the Cions of the *Spaniſh Jeſſamine* upon their budding forth produceth *Leaves* bloached with Yellow, and I doubt not but they may be made *Edgers* by the ſame Skill; from which it appears, that when the moſt ſubtil *Juices* of a Plant are poiſon'd, any Plant which ſhall be fed from it will be envenom'd by it. It would therefore be well to ſow the Seed of *Miſletoe* upon *Edged-leav'd* Plants, to have it with Variegated *Leaves*. What relation theſe Obſervations may have to Animals, may be further conſider'd by thoſe whoſe Studies more immediately relate to the Health and Preſervation of Animal Bodies. I ſhall proceed to conſider the ſtrip'd *Hollies*, with reſpect to their Figure and Uſe in Gardens: The Nature of this Plant is ſuch, that it cannot be Pruned into thoſe nice Figures, which others whoſe *Leaves* are ſmall have been framed to; therefore I cannot propoſe any other form than that of a Pyramid, or a Ball or headed Plant. The firſt ought to be kept taper, ending in a ſharp Point on the Top, and the headed Plants of them ſhould be ſo prun'd, that their Heads may reſemble the Cap of a *Muſhroom*, which Figure in my Opinion is to be preferr'd before that of a *Globe*. Theſe Plants, if they are well train'd up, and have their *Leaves* beautifully Variegated, are very Ornamental, when they are mix'd skilfully with Plants of *Ever-greens*, ſuch as *Yews*, *Lauruſtinus*, or the like.

I have read ſome where of a pretty Invention of planting *Ever-green Hedges* with *Columns* and *Pilaſters* of Variegated *Hollies* ſet in them at certain diſtances, which muſt needs have a good Effect if they are well prun'd; and I think, if handſome Flower-Pots were placed on their tops, ſo that a healthful Branch might go through each of them to be train'd into *Balls* or *Piramids*, it would ſtill contribute to the greater Beauty of the Deſign.

SECT. II.

Of the YEW-TREE.

THE *Yew-Tree* is very ſlow of growth, and therefore produceth tough and hard Timber: In ſome parts of *Surry* we find ſome *Groves* of this beautiful *Ever-green*, which conſiſt of very large *Trees*, and ſeem rather to be the Produce of Nature than Art; the *Roots* are apt to break into many *Fibres*, and therefore this Plant delights in light Soil, and ſuch as is commonly ſtiled Barren; the coldeſt Mountains produce this *Tree* more readily than the richeſt Soils, or more gentle Expoſures, ſo that rich Manures are to be avoided in the Culture of this Plant; the *Berries* of it after they are cleaned from their Pulp, and well dry'd, may either be laid in Sand, as I have directed thoſe of the *Holly*, before they are ſown, or mix'd with the Bran and Water before mention'd, for their more ſpeedy Germination. The *Leaves* of the *Yew* are ſo ſmall, that it is poſſible to bring this kind of *Tree* into any Form we deſire, as the Famous Plants now growing in the *Phyſick-Garden* at *Oxford*, and that in the Church-Yard at *Hillingdon* near *Uxbridge*, may certify. I have ſeen great Varieties of Figures very well repreſented in Plants of this ſort, as Men, Beaſts, Birds, Ships, and the like; but the moſt common Shapes which have been given it by the Gardeners, are either Conick or Pyramidal. It is of great uſe for Hedges, and make moſt agreeable diviſions in Gardens; it is cuſtomary to fence in the Quarters of Wilderneſs Works with theſe Plants, where they have a very good Effect; in a Word, there is no difficulty in propagating this Plant, and little hazard in the removal of it, eſpecially if the Roots of it are prun'd from time to time by digging about it, while it ſtands in the Nurſery. Its time of tranſplanting is in *September*, or ſo ſoon as the Weather is open in the Spring Seaſon.

SECT III.

Of the LAURUS-TINUS.

THE *Laurus-tinus* is a Plant whoſe Beauty chiefly conſiſts in the Flowers which adorn it about *Chriſtmas*, and moſt of the Winter Seaſon; it may be raiſed from the Berries, managed in the ſame manner as thoſe of the *Holly*, but the moſt Expeditious way for the propagating of it, is from *Layers*, *i. e.* by laying down the youngeſt Branches of it in the Earth, about the Months of *September* or *October*, which will ſoon ſtrike Root and afford us

Plants fit for uſe. It is a quick Grower, but very ſeldom makes a large *Tree*, it is often train'd up to a headed Plant, and introduced among *Hollys* and *Yews* into the Parterre. But I ſhould rather direct, that it be planted againſt a Wall, or in Wilderneſſes, where it may avoid the Knife for the ſake of its Flowers, which an unskilful hand often robs it of by untimely pruning, It is to be noted, that this Plant like all other Exoticks, is naturally inclin'd to Bloſſom about the time of the Spring in its own Country. I have particularly obſerv'd, that all Plants from the *Cape* of *Good hope* make their ſtrongeſt Shoots, and begin to Bloſſom towards the end of our Autumn, which is the time of the Spring in that part of *Africa* they were brought from; and ſo likewiſe all others from different Parts and Climates retain their Natural Courſe of Vegetation, for which reaſon, ſuch Exoticks ſhould be prun'd in our Spring Seaſon, that they may the better diſpoſe themſelves for ſtrong Flowering Shoots in the Winter; but more of this in another place. *The Laurus-tinus*, altho' it is impatient of Froſt, delights to grow in ſhady and moiſt places, and flouriſhes well in Loam without the help of any rich Manure, which will forward its Growth too much, and by that means make it too ſubject to feel froſty Weather, and alſo to fling away its Sap in uſeleſs Shoots, which ever ſpoils the Bloſſoming of *Trees*, for the ſame reaſon that exceſs of Vigour is a hindrance of Prolificity.

SECT. IV.

Of the BAY-TREE.

THE *Bay*, altho' it may be raiſed from *Layers*, *Suckers* or *Cuttings*, yet it grows much better if it be propagated from the *Berries*,; however for the greater Satisfaction of my Reader, I ſhall ſpeak particularly of each way of raiſing this Plant. Firſt then, if we propoſe to raiſe this Plant from *Layers*, we muſt bend down the tender Shoots to the Ground, and after having faſten'd them in the Earth with Hooks, cover them 4 or 5 Inches with fine Earth: This Work muſt be done about *October*, at which time likewiſe the *Suckers* may be taken from about the Body of this *Tree*, with as much Root as can be got with them; plant them in ſhady moiſt Places, in gravelly Soil, without any rich Mixture, watering them well at firſt planting, as all Plants ought to be on that occaſion, chiefly to ſettle the Earth cloſe about their Roots. In *October* alſo we may ſet the *Cuttings* of *Bays* in Pots of fine

Earth two or three Inches deep, and preſerve them under ſome Shelter during the Winter; they will with that management alone ſtrike Root, without the help of a hot Bed.

In the next place, if we deſign to raiſe this Plant from the *Berries*, gather them when they are full ripe, and after having ſpread them abroad to Sweat, keep them till the *February* following in dry Sand, then ſow them on a Bed of Earth freſh dug, and ſift over them ſome freſh natural Earth, about two Inches thick. If after this Work the Weather happen to be moiſt, you may expect them to come up in about ſix Weeks after ſowing; theſe Seedlings require ſhelter with Straw or Fern, for the three firſt Winters, after which time they ſhould be tranſplanted, leaſt their Roots run too deep into the Earth, and by that means the Plants may receive prejudice by removing them. I have ſeen Piramids and headed Plants of *Bays* introduceed in Parterre Works, but cannot adviſe it, leaſt they ſhould be injured by hard Weather, which often would be apt to change their Colour, and perhaps kill them. But if by our Skill and Induſtry we have been Fortunate enough to train up ſome of this kind of *Tree* to handſome Plants, let them be put in Pots or Caſes and houſed in the Winter, that their Beauty may be preſerv'd. The fineſt Trees of this Kind that I have ever ſeen, either in *England* or abroad, are now in the Gardens of the *Royal Palace* at *Kenſington*, which are of very great Value: However if it ſhould be the Deſire of any one to propagate this Kind of *Plant*, who has not the Convenience of a *Green-Houſe*, or Place of Shelter for them in the Winter, we may plant them in *Hedges* or againſt *Walls*; and if ſevere Froſts ſhould by chance diſcolour them, yet let not the Owner be diſcouraged; let the *Plants* ſo injured have their top *Branches* cut off in the Spring, and they will ſhoot out a-freſh.

In *Holland* and *Flanders* I have ſeen the *Bay* with its *Leaves* finely variegated. Some *Plants* of it I have brought into *England*, which I have increas'd by ingrafting *Branches* of them upon our common *Bay*. But I yet have not ventur'd it to ſtand abroad in the Winter.

SECT. V.

Of the BOX TREE.

THE *Box Tree* is very eaſily propagaed, either by *Slips*, *Layers*, or *Seeds*. It is a *Plant* very valuable for its Wood, ſo much uſed for Mathemtical

Inſtruments, Combs, and ſuch like Works; and the continu'd *Vardure* of its *Leaves* makes it an aceptable *Plant* to the Gardener. *Box-hill* in *Surry* ſhews us the Excellencies of this *Plant*, as well from the Profit of its Wood, as the pleaſing Shade of the *Box-Trees* growing upon it, which are ſome of them ſo large, as to equal almoſt any other Sort of Timber Trees. This *Plant* will make delightful *Hedges* in Gardens, and is next to the *Yew*, the beſt *Tonſile Tree* for the *Parterre*. As it is a ſlow Grower, and produces a ſmall Leaf, it delights in chalky Mountains, where it will grow much quicker than it does in our Gardens. It is on thoſe Hills where it ſhould be planted therefore for Profit, tho' a natural Soil in a Garden is rather to be prefer'd, if we would keep it in Shape and within Bounds: The beſt time of the Year to make *Layers* or *Slips* of it, is in *September*, and the *Seeds* of it, may be either ſown ſo ſoon as thy are full ripe, or laid in *Sand* during thc Winter, to be ſown the Spring following; The *Seeds* of this Tree, like thoſe of the *Holly*, may be forwarded in their *Growth* by the *Bran* and *Water*.

Beſide the common Sort, I have been ſpeaking of, I have ſeen one with variegated *Leaves* which makes a very beauti-

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in ſuch *Plants* as ſhed their *Leaves* in Winter. But this Caſe I ſhall treat of more amply in another Place.

The *Laurel* may be propagated after the ſame Manner as I have directed for the raiſing of the *Bay*, either from the *Berries*, or by *Layers* or *Cuttings*; it loves Shade, and will thrive in (almoſt every Soil, it reſiſts the Weather, and has that Bitterneſs in its *Leaves*, that Cattle will not readily annoy it. But wild Fowl, ſuch as *Pheaſants*, *Patridges*, *Wood-cocks*, *Black-birds*, and the like, delight to ſhelter themſelves under its cover in hard Weather, therefore it might be planted in Parks or other Places of the like Nature, for the Increaſe and Preſervation of Game-Fowl.

SECT. VII.

Of the PHILLYREA.

THE Nurſery-Men know five Sorts of *Phillyrea* by the following Names, the *Plain Phillyrea*, the *bloach'd* kind, the *true Phillyrea*, the *Dutch ſilver'd-leav'd* Sort, and the *Gilded Dutch* Kind. The *firſt* or moſt common of theſe may be propagated from the *Berries*, order'd like thoſe of the *Holly*, or it may with the other Sorts be raiſed by *Layers*, which preſently take

Root; it delights in a natural light *Soil*, without any Mixture of rich Compoſt. Both this and the *bloach'd leav'd Phillyrea* are very quick Growers, and make tollerable *Hedges* if they be well ſupported with ſtrong Rails or Stakes, but without ſuch Helps are not capable of reſiſting the Strength of the Winds; but the *true Phillyrea* is better able to defend it ſelf againſt the Inſults of Storms, and its ſlow *Growth* makes it a fit Companion for the beſt *Evergreens* in the *Parterre*. I have ſeen *Pyramid* and headed *Plants* of this Sort which have equal'd in their Beauty any other of the Garden Race, but the *plain* and *bloach'd* leav'd Kinds are with great Difficulty kept in any Form. The *Dutch-ſilver-leav'd* and *gilded* Sorts are valuable for the ſmallneſs and elegant *Variegations* of their *Leaves*, they may be eaſily trained into any Shape, but cannot abide the Froſt, therefore are not ſo properly the Inhabitant of open Gardens, as of Places of Shelter. The time of laying the tender Branches of theſe and all other *Phillyrea*'s into the Earth, is in *September*, by which Means we may greatly increaſe this Kind of *Plant*.

SECT. VIII.

Of the ALATERNUS.

THE *Alaternus* of the Gardeners differs from what they call *Phillyrea*, by being narrower leav'd; and from the *Privet*, by having Notches on the Edges of its *Leaves*. Mr. *Evelin* gives us one very material Remark of it, *viz.* that the *Seeds* of the *Alaternus* come up in a Months time after ſowing; he directs, it ſhould be planted out, at two Years *Growth*, either for *Hedges*, or to be train'd up into figured *Plants*; the ſudden *Germination* of the *Seed* ſhews it not to be a *Phillyrea*, whoſe *Berries* lie a long time in the Earth before they ſprout; it may be increas'd alſo from *Layers*, treated like thoſe of the *Phillyrea*, and delights in the ſame Kind of *Soil.*

SECT. IX.

Of the JUNIPER.

OF the *Juniper* we have two Kinds known to our Gardeners, the *common*, and what they call the *Swediſh Juniper*; both of them reſiſt the moſt ſevere Froſt, and for that Reaſon, as well as for their beautiful *Green*, ſhould have their Place among other *Evergreens* of the *Parterre.* The Smallneſs of their *Leaves* is ſuch, that an ingenious Workman may train them up into any Shape, and by often cutting or ſheering them, they will be ſo cloſe, that no other *Plant* can be ſaid to exceed them in that Reſpect. It delights in barren *Soil*, ſuch as *Heaths* or *Downs*, where I have ſeen the common kind grow freely and plentifully. The *Berries* ſhould be ſown about *March*, in light Ground without watering them, or giving them any rich Manure; They come up in two Months after ſowing, and may remain two Years in the *Seed-bed*, before they are transplanted, taking great Care to keep them free from Weeds. I remember to have heard of a *Juniper Tree* above forty Foot high, and I think Mr. *Evelin* has ſomewhere mention'd one of that Sort, which made an Arbour of eleven Foot high in ten Years time. The *Juniper* affords a moſt durable Firewood, if it be true what has been ſaid of it, that in a Heap of its *Aſhes*, which have lain a Year, ſome of its *Embers* have been red hot during all that time.

SECT. X.

Of the PIRACANTHA.

THE *Piracantha* has many Perfections which are not found in other *Ever-greens* of the *Parterre*, and yet to my great Wonder is very little taken Notice of about *London*, inſomuch that I know not any one Nurſery where it is cultivated; beſides the Beauty of its *Leaves*, the Bunches of white Bloſſoms which it produces in *May* are very Ornamental, and its *Coral*-like Beads, which hang upon it in Cluſters all the Winter, affords us a moſt delightful Proſpect; to all theſe Perfections we may add the Strength of its *Thorns*, which makes it one of the moſt uſeful *Plants* for *Hedges* that I know of. I have ſeen ſome *Plants* of this Kind train'd into *Balls* and *Pyramids* almoſt cover'd with the ſcarlet Berries, when Nature ſeem'd to reſt in other things; and indeed was I to make a Winter Garden, this Tree would be no ſmall Contributer to the Ornament of it; but let us now proceed to the *Culture* of this beautiful *Plant*: It may be raiſed either from the *Berries*, or from *Layers* or *Cuttings*. The *Berries* when they are full ripe ſhould be order'd like thoſe of the *Holly*, and are ſubject to lye as long in the Earth; but I would adviſe, that they be given to Fowls to eat, that by paſſing through their Bodies, they may the ſooner come up and be better prepared to *vegetate*. In *Devonſhire* where this *Plant* abounds, it has been obſerv'd that ſuch Fowl as feed upon them, ſcatter them over the Country, where they thrive exceedingly, but are very difficult to tranſplant, having few *Fibers* at their Roots; therefore when they are come up and have ſtood a Year or two at moſt, they ſhould be planted out where they are to remain. In the Removal of this and other Trees of the like Nature, we muſt be careful to keep the Roots from drying before they are put again into the Ground, leaſt by that alone our *Plants* are often loſt. If we would raiſe theſe *Plants* from *Layers*, lay down only ſuch *Branches* as are tender and of the laſt Shoot, which Rule muſt be obſerv'd in the laying of all *Evergreens* whatever; for the more woody *Branches* will not ſtrike Root by any means. About *May* or *June* we may plant *Cuttings* of the freſh tender *Twigs* in Pots of fine Earth, watering them frequently, and keeping them from the Sun 'till the following Winter, at which time a warm Expoſure will be helpful to them, and prepare them to make a ſtrong Shoot in the Spring. *Plants* raiſed in this Manner may be tranſplanted with greater Eaſe and leſs Hazard than thoſe raiſed from *Seeds* or by *Layers*, as I have experienced. The *Piracantha* delights in a dry Gravelly Soil, and will grow to be a large Tree if rightly managed and kept from Dung or other rich Manure which will deſtroy it.

SECT. XI.

Of the ILEX.

ALtho' I have mention'd this *Plant* in the former Part of this Work to be a valuable Tree for Timber, yet I cannot well avoid in this Place to take Notice of the great Uſe which might be made of it in Gardens. I have ſeen *Piramid Plants* of it near thirty Foot high, and there are *Hedges* of it now growing in *England* of above that Height, which have been ſown but a few Years ſince. Such Shelter would be much more preferable than the *Dutch Elm* or *Horn-beam* for the preſerving of *Orange Trees* from the Sun and Blaſts, and might be made uſe of to defend our Fruit Trees from the Blights which too frequently attend the North-Eaſt Winds of the Spring: See the *Culture* of this Tree in the *firſt Part*: The *Cork-Tree* muſt be propagated after the ſame Manner, and is much like it.

SECT. XII.

Of the Arbutus, or *Strawberry-tree.*

THE *Arbutus*, altho' an *Exotick Plant*, thrives very well in our Climate; it is a moſt beautiful Tree, bloſſoming twice a Year, and has its *Fruit* ripe in the Winter, yet notwithſtanding theſe Excellencies, it is little ſought after, perhaps as it is a Stranger, and not ſuppoſed to be hardy enough to reſiſt our *Froſts*. I have heard of it growing plentifully in *Ireland*, and have ſeen very large Trees of it in ſome Gardens about *London*. The *Plant* indeed is not ſo well diſpoſed to be train'd up in nice-ſhaped *Trees*, as many others, but it makes a moſt agreeable *Hedge*, and is very Ornamental in *Wilderneſs Works.* It loves a light Gravelly Soil, and may be raiſed either from the *Seeds* or *Layers*. The *Fruit*, (which to all appearance, is a *Strawberry*, but rather taſting like the pulp of a *wild Service*,) muſt be gather'd about *Chriſtmas*, and laid to dry for a Month, and then bruis'd and mix'd with Sand, in order to be ſown in Pots of light Earth, and cover'd about a quarter of an Inch with ſifted *Mould*. This *Work* muſt be done in *March*. The gentle Heat of a hot *Bed* will much help the Germination of the *Seeds*, which ſhould be fre-

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quently ſprinkled with Pond Water till they come up.

The moſt tender Shoots of this *Tree* may be lay'd down about *September* in fine Earth, and will ſtrike Root in a Year's time, if they are kept moiſt by frequent Watering, but will not be ſtrong enough to tranſplant till the Spring following, and muſt then be kept in the ſhade for two or three Months.

SECT. XIII.

Of the Italian GREEN-PRIVET,

THIS *Plant* was brought from *Italy*, by Mr. *Balle*, among other Curioſities of the like Nature; its *Leaves* are not unlike thoſe of the *Olive*; among other Names given it by the *Italians*, it is call'd the *Olivetta*. This *Plant*, altho' it is a quick Grower, makes an admirable Hedge, if it be often Clipp'd; and tho' it be a Foreigner, deſpiſes the Violence of our Froſts and maintains its Verdure all the Winter? I have not yet ſeen the Flowers of it, but have had many of the *Berries*, which ſomewhat reſemble the Fruit of the *Mirtle*. We muſt ſow the *Berries* of this *Plant* in *March* about an Inch deep in light Earth, Watering them frequently till they come up, and tranſplant, them from the Seed Bed the ſecond

Year after ſowing. I ſuppoſe a hot Gravelly Soil to be the moſt proper for it, having Planted it in that ſort of Ground where it has made Shoots of Four Foot long in one Summer..

Now beſide the *Ever-greens* I have mention'd for *Hedges* and *figur'd Plants*, agreeable to *Parterre* Works, it may not be amiſs to take Notice of ſuch others, as I have ſeen propagated by the Curious for different uſes; the *Olive*, *Lenticus* and the *Piſtachio* may be Planted againſt Walls expoſed to the South Sun, and will thrive very well without other Shelter. I remember to have ſeen perfect *Fruit* of the *Olive* in Mr. *Darby*'s Garden at *Hoxton*, and I think alſo in the Gardens belonging to the *Biſhop of London* at *Fulham*, and I am of Opinion it is a *Plant* hardy enough to maintain it ſelf in our Climate without any Shelter, which would be very well worth our Tryal; it is propagated by laying down the young *Branches* in the Earth about *March*.

The *Lenticus* is a *Plant* commonly kept in Green-Houſes, but is ſometimes planted againſt a warm Wall without Doors; it is raiſed from the *Berries*, which are brought from *Italy* and other Places in the *Mediterranean* Sea. The *Piſtachio* likewiſe is a *Plant* which will thrive well enough in our Climate, and may be either raiſed from the *Nuts* or *Suckers* managed as the other *Ever-greens* I have mention'd before. This laſt *Tree* is commonly planted againſt a Wall, and in that ſtation I have ſeen it bear Fruit at the late Biſhop of *London*'s Gardens at *Fulham*; I have ſeen it alſo growing in the Wilderneſs, belonging to the Earl of *Peterborough* at *Parſons-Green*, where (altho' it bore Fruit plentifully,) the Name of it was not known till laſt Year.

The ſeveral kinds of *Firrs* are likewiſe Ornamental in Wilderneſs Works, and are beneficial in Sylvan Plantations; there are many kinds of them which are all raiſed from Seeds ſown in *September*, they love ſhallow Ground ſomewhat binding, and ſhould have their *collateral Buds* broke off, while they are Young and Tender, by which means the *Timber* will be free from *Knots*.

In the next place, the *Cypreſs Lignum Vitæ*, and *Cedar of Libanus*, with others of the like nature, may be propagated as the former, for Wilderneſs Works.

And now, as I have ſet down the Culture of all ſorts of *Ever-greens* which the Curious may deſire to propagate for *Parterre* and *Wilderneſs Works*, I ſhall conclude this Chapter with a Word or two concerning *Graſs Turfs* for *Verges* or *figured Works* in Gardens, which I think cannot be ſo properly introduced in any other part of my Deſign as in this place, ſeeing how much Works in Graſs contribute from their beautiful *Ever-green* to Embelliſh a *Parterre.* The beſt times for laying of Graſs Plats are the Months *March* and *September*, and the beſt *Turfs* for that uſe are ſuch as are taken from the moſt barren Lands, as *Heaths* and *Commons*, where the *Sword* or *Blade* of the *Graſs* is narrow and ſhort. To lay a Graſs Walk, let the Ground be well dug and level'd; then after it is trodden down, or beaten and raked by a nice Hand, lay down your *Turfs* cloſe together, and *Role* them with a wooden *Roler*, for five or ſix Mornings ſucceſſively, till they are well preſs'd, and the *Turfs* begin to ſtrike Root; by this Method a Gentleman may quickly be Maſter of good *Graſs Walks* or other *Graſs Walks*, and enjoy a continued Delight from them, eſpcially if they lye moiſt, and are ſomewhat ſhelter'd from the ſcorching heat of the Sun, which is too apt to tarniſh them. I ſhall now proceed to ſpeak of ſuch Flowering Trees and Shrubs as are proper for the adorning of Gardens.

CHAP. III.

Of Flowering-Trees *and* Shrubs, *their Culture and Uſe in Gardens.*

AS I eſteem *Flowering Trees* and *Shrubs* to be the next after *Evergreens*, which a curious Perſon will be deſirous of propagating in his Garden; ſo in the Culture of them I ſhall be no leſs particular than I have been in the foregoing Chapter of the Management of *Evergreens.*

I ſuppoſe no one is Ignorant, that the greateſt part of theſe *Flowering Trees* and *Shrubs*, which are at this time ſo well known to our Gardeners, are *Exotics*, and it is well worth our Enquiry what Climes they were at firſt brought from, that for the better Embeliſhment of our Gardens, we may ſtill ſeek after many other Varieties of the like kinds, in thoſe Countries whoſe natural State of Weather moſt nearly reſembles the Properties of our Climate.

I find that Plants of *Virginia*, and even thoſe of the *North* Parts of *Carolina*, will bear our Froſts, if they are managed with Judgment. The *Tulip*, *Tree*, for Inſtance, which flouriſhes ſo well in the Earl of *Peterborough*'s Wilderneſs at *Parſon's-Green*, is a *Virginia Plant*, and yet finds no difference between the Degrees of 38 and 52. In its native Country; it is an Inhabitant of the Woods, and in my Lord *Peterborough*'s Garden it flouriſhes in a Wilderneſs, but I have known it planted in a much warmer, and more open Expoſure, and it has periſh'd; this ſhould be always conſider'd by the Gardener, to plant every *Tree* in a Wood which is natural to a Wood, and upon a Plain that which is the Native of a Plain. I might here ſet down the moſt proper Method for bringing over ſuch curious *Plants* as grow in Foreign Countries into *England*, and might give ſome Rules for the naturalizing them when they are with us; but as I have now by me ſome Papers purely relating to the Culture and Management of *Exotic Plants*, which I am perſwaded to make publick, I muſt crave my Reader's Patience till I preſent him with all that I know relating to that Subject, and at preſent only give him the neceſſary Direction for the Management of thoſe *Foreigners*, which are already naturalized to our Country.

The *Plants* which will make the Contents of this Chapter, as the moſt worthy our Care, are *Jaſmines*. *Hony-Suckles*,

kles, *Lilac*, *Syringa*, *Roſes*, *Guilder-Roſe*, *Brooms*, *Liburnum Mezereon*, *Spireas*, *Arbor-Judæ*, *Paſſion-Trees*, *Senna's* and *Tulip* Tree.

SECT. I.

Of the JASMINE.

OF the *Jaſmine* there are three ſorts, which bear our Froſts, known to the Gardeners, and diſtinguiſh'd among them by the Names of the *common White Jaſmine*, the *Yellow Jaſmine*, and the *Perſian Jaſmine.* The firſt of theſe is capable of reſiſting the moſt ſevere Weather; it is generous in its Growth, ſhooting ſometimes more than Six Foot in a Summer. It produceth its white fragrant Flowers about *June*, and continues Bloſſoming till *September*; it is propagated from *Layers* or *Cuttings* with great Facility, and will grow in any *Soil.* The time of *Laying* the young *Shoots* of this *Plant* into the earth is about *September*, and at that time we may likewiſe plant *Cuttings* of it about a Foot long, always taking Care that two *Knots* be under Ground, for it is juſt below the *Buds* that the *Roots* ſpring forth, *i. e.* from the Place where the *Leaf* of that Summer had join'd it ſelf to the *Branch.* This *Plant* is ſo delightful, that I think no curious Perſon can be without a large Plantation of it, either to plant againſt *Walls* or *Trees*, or elſe to train up into *headed Plants.* I have ſeen this ſort of *Jaſmine* planted in Hedges of *Dutch Elm* and *Hornbeam*, curiouſly intermixing it ſelf with them, and yielding a moſt agreeable Entertainment to the Owner, by means of its pretty *Bloſſoms* and their delightful *Odour.* When it is train'd into headed *Plants* and kept in *Pots*, it ſerves to adorn the Chimnies in the Summer Months, and it is alſo of uſe to *Engraft* the *Spaniſh White Jaſmine* upon, or thoſe of its own kind with *Variegated Leaves.*

The *Yellow Jaſmine* has its Leaves more ſhining than the former, and its Flowers not much unlike thoſe of the *Yellow Indian Jaſmine.* I have ſeen but few Plants of it about *London*, altho' its Beauty is, in my Opinion, ſurpaſſing the former; it is hardy enough to endure the moſt ſevere Weather of our Clime, and may be propagated from Layers like the other. I remember to have ſeen it proſper well againſt a *Wall* in a light ſandy *Soil*, and I am apt to believe the *Indian Jaſmine* might be grafted upon it, as the Smell of both their *Flowers* are ſo nearly the ſame; which ſeems to inform us, that the Parts and Juices of one and the other are alike, for if a Flower contains the moſt refin'd *Juices* of a *Plant*, and if it is allow'd that the Odour of that Flower proceeds from certain Vapours, ariſing from the *Juices* contain'd in it, then it ſeems reaſonable to believe, that when we meet with Flowers of different *Plants*, which touch the Organs of Smelling in the ſame manner, the *Juices* of each of them muſt then be alike, and the *Veſſels* and *Glands* through which they have paſs'd from the *Root*, muſt be nearly the ſame, either in Figure or Quality, and ſometimes in both.

The *Perſian Jaſmine* bear Flowers of a Purple Colour, but ſeldom makes a large *Plant*, it will bear the Weather, and make a pretty Show in Wilderneſs Works, among other flowering *Shrubs*; it may be raiſed from *Layers* or *Suckers*, and loves a light *Soil*.

SECT. II.

Of the Wood-bind or Honey-Suckle.

THE Gardeners cultivate ſeveral kinds of *Honey-Suckles*, diſtinguiſh'd among them by the Names of *the Forward Blowers*, *Later Blowers*, *Scarlet Flower'd* and *Evergreen Honey-Suckle*; theſe are all of them *twining Plants*, and are raiſed from *Layers* or *Cuttings*, order'd like thoſe of the *Jaſmine* in *September* or *Octo-*

ber; they love Shade, and are the Natural Inhabitants of Woods, where the neighbouring Trees ſerve them for their Support; ſome or other of them ſhew us their *Bloſſoms*, and perfume the Air with their fragrent Odours, throughout the whole Summer, and therefore it would be needleſs for me to adviſe a Gardener to provide himſelf with every Variety of it, which I have mention'd. The *Flowers* are in themſelves beautiful, and as the *Plant* is a quick Grower, let it be planted about Trees in Avenues, to intermix its *Bloſſoms* among the *Branches* of ſuch as the *Elm*, *Oak*, and the like. Now altho' the *Honey-Suckle* is a *twining Plant* like the *Jaſmine*, yet may it be train'd up into a *Standard*, and has an admirable Effect, as a *headed Plant*, in the moſt remote Parts of *Parterre* Work; for to plant it among *Evergreens*, in or about the Center of ſuch a Garden, would wound the Proſpect for many Months of the Year, when it was vacant of Leaves.

If I may be allow'd to direct the Fancy of other People, I would adviſe, that every ſort of Flowering *Shrub* ſhould be trained into *headed Plants*, and planted in Garden Pots, that when they are in *Flower* they may be ſet in the Borders between the *Evergreens*, and removed ſo ſoon as their *Bloſſom* is over, to make room for others.

SECT. III.

Of the LILAC.

OF the *Lilac* there are two ſorts, commonly known to the Gardeners by that Name, *viz.* the *Blue* and the *White.* The Botaniſts indeed call the *Lilac* by the Name of *Syringa* or *Pipe-tree*, but the Gardeners give the Name of *Syringa* to another Plant; therefore as my Deſign here is chiefly dedicated to the Uſe of Gardeners, I ſhall call every Plant by the Name they know them by, and at the End of my Work endeavour to reconcile the *Botaniſt* with the *Gardener*, by an *Index* of Names in *Latin*, *Engliſh*, and other Languages now in Uſe. The *Lilac* then is a Plant which grows to a pretty large *Tree*, bearing its Bunches of *Blue*, or rather *Purple Bloſſoms*, like Plumes of Feathers in *May*; I know not any Sight more agreeable than this *Tree* when it is full of *Flowers*, and altho' it is very common, is well worth our Propagating. Small Walks of theſe *Trees* are very pleaſant, and they are no leſs Ornamental in the Quarters of *Wilderneſs Works*, eſpecially if the *White* flowering kind be judiciouſly intermix'd with them. They may be raiſed by *Laying* down the young *Branches* in *March*, or by taking off the *Suckers*, and planting them in a light *Soil* in the ſame *Month*, or about *September*.

SECT. IV.

Of the SYRINGA.

THE *Syringa* has two Qualities which were taken Notice of by that Learned and Curious Botaniſt the late *Biſhop of London*, *viz.* That the *Leaves* taſted like *Green Cucumbers*, and the *Bloſſoms* had the Odour of *Orange-flowers*; this *Shrub* is propagated as well for Wilderneſs Quarters as for headed Plants, and is often planted in Pots to adorn Chimnies in the Summer. They produce their Bunches of fragrant white *Bloſſoms* in *May*, and continue *Blowing* for ſix Weeks. I have not yet try'd to raiſe them from *Seeds*, nor indeed would it be worth while, ſeeing how apt the *Root* is to put out *Suckers*, which may with great Eaſe be taken off about *March* or *September*, and tranſplanted. The *Syringa* will grow almoſt any where, and if planted in a ſhady Place will ſhoot vigorouſly, but being much expoſed to the Sun, will produce *Flowers* in greater abundance.

SECT. V.

Of the ROSE-TREE *and its Kinds.*

WE have more Variety of *Roſes* propagated by our Gardeners, than of any other flowering *Tree* or *Shrub*; the Flowers are moſt delightful for their agreeable Odour and Beauty, I have ſeen one or other of them *Bloſſoming* for ten Months of the Year, without uſing any great Art to alter the natural Seaſon of their *Blowing*. The Gardeners diſtinguiſh them by the following Names, firſt the *Cinnamon Roſe*, which is the moſt forward Blower; *the Monthly Roſe*, and the *Cluſter Monthly Roſe*, which if they happen to be planted againſt a warm Wall, will begin to blow about the latter End of *March* or the Beginning of *April*, and continue to produce *Flowers* for almoſt three Months, and if after they are out of *Flower* they have the Tops of their Branches prun'd off, we may expect a ſecond Crop of *Roſes* from the ſame *Trees* in *Autumn*, which will continue their *Bloſſom* almoſt till *Chriſtmas*, if the Weather be open. The next after theſe is the *Damask Roſe*, which will begin its *Bloſſom* in *May*, and continue Flowering for above ſix Weeks. The *Roſamundi* or *York* and *Lancaſter Roſe*, with the *White*, *Red* and *Yellow Roſes*, begin their *Bloſſom* ſomewhat later than the *Damask :* And laſt of all, the *Centifol*, or *Province-Roſe*, ſhews us its ſurprizing *Flowers* ; but beſides the ſeveral Sorts which I have here ſet down, there are many others which I have not yet ſeen. That curious and incomparable Patroneſs of Botany, the late *Dutcheſs of Beaufort*, has told me of 16 different ſorts, which her Grace cultivated in her Gardens at *Badminton* ; but altho' the ſeveral ſorts of *Roſes* differ in their times of *Flowering*, yet are they all propagated after the ſame manner ; they love a ſtrong holding Ground, and delight ſo much in moiſt Places, that they will even grow in Water ; they may either be raiſed from *Layers* or *Suckers*, the firſt may be *layn* down in *September*, and the *Suckers* may be taken from the old *Roots* in that *Month*, or about *March*, and tranſplanted immediately, before their *Roots*, which have but few *Fibers*, grow dry ; but in caſe Neceſſity obliges us to keep them out of the Ground for ſome time, lay their *Roots* in Water for five or ſix Hours before *Planting*. The *Roſe-Tree* may be either cultivated for the Quarters of Wilderneſs Works, to be planted there among other *Flowering Shrubs*, or trained up into *Standard-Plants* for *Pots*.

SECT.

SECT. VI.

Of the GUILDER-ROSE.

THE *Guilder-Roſe* bears its Bunches of *White Bloſſoms* (as big as a large Tennis-Ball in *May*. The *Plant* ſeldom riſes very high, or is capable of being kept in a regular Form, therefore is chiefly propagated for *Wilderneſſes* or other wild Places; it delights in a holding Land, and may be rais'd from *Suckers* taken from about the old *Root*, either in *March* or *September*.

SECT. VII.

The SPANISH BROOM.

THE *Spaniſh Broom*, altho' there is no great Beauty in its *Leaves*, yet the *Spikes* of *Yellow Flowers* which it puts forth in *June*, makes it a *Plant* very deſirable in our Gardens. It is an irregular *Plant*, by no means to be brought into any Form by the Gardener. It may be planted in Wilderneſs Works with other flowring *Shrubs*, among which it makes a good Show. We may raiſe it from *Seeds* ſown in *March* in light Earth, and alſo by laying down the tender Branches in the ſame Month, and cutting them at the

Joynts after the manner of *Carnation-Layers*; but this laſt Way is not ſo certain, and more troubleſome than the Raiſing of them from *Seeds*.

I cannot forbear taking Notice in this Place of the common *Engliſh Broom*, and the *Furze-buſh*, as Plants well enough worthy our Care; the firſt to mix with the Shrubs of the Wilderneſs, and the other to be trained into *Figur'd Plants*; theſe are both raiſed from *Seeds* ſown in *March*, and will not bear Tranſplanting after they are one Year old, without great Care. I have ſeen ſome *Plants* of the *Furze-buſh* cultivated in Gentlemen's Gardens, not any ways inferior to the Beauties of the moſt valuable *Evergreens*; it is tonſile at the *Yew*, and in my Opinion exceeds it in one reſpect, *i. e.* that it *Bloſſoms* in all Seaſons of the Year; and was it not ſo common, I doubt not but it would be more frequently planted in our Gardens than any other *Evergreen*. If it be kept well cut, it makes moſt beautiful and impenetrable Hedges.

SECT. VIII.

Of the LABURNUM.

THE *Laburnum* is an agreeable *Shrub*, or rather a little *Tree*. I have ſeen above twenty Foot high, cover'd with

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its beautiful Strings of yellow Flowers in *May* and *June*; and yielding plenty of Fruit which ripens about *September*; this *Plant* reſiſts our ſevereſt Froſts, and will grow in the moſt open Expoſure, as well as under the Shade of large *Trees*; it is commonly planted among the other Flowering *Shrubs* of the *Wilderneſs*, and may be eaſily raiſed from the *Seeds* ſown in *March*, and tranſplanted without Difficulty two Years after it is come up.

SECT. IX.

Of the MEZEREON.

THE Gardeners know two ſorts of *Mezereon*, *viz.* That with the *Red Flower*, and the *White Flowering ſort*: The firſt is common enough in every Garden, but that with the *White Flower* is rare; they are both of them *Dwarfs*, ſeldom riſing higher than three Foot, but have two Excellencies, which make them more Valuable than much taller *Trees*; their *Stalks* are cloathed with the *Flowers* in *January*, and the Air is then perfum'd with their delightful *Odours*; they remain a long while in *Bloſſom*, and are afterwards no leſs beautifully adorn'd with their *Fruits*. I know no other way of propagating them than by ſowing the *Seeds* in *March*, if you can ſave them from the Devouring Birds which delight in them. I have eat ſome of the *Berries*, which were not unpleaſant to the Taſte, but about an Hour after I had ſwallow'd them, I found an extraordinary Heat in my Throat, which caus'd a violent burning Pain for above twelve Hours. It would be well enough worth our Enquiry, Whether the *Seeds* of all forward blowing *Plants* are not hot, in proportion to thoſe of the *Mezereon?* and, Whether their extraordinary Heat is not one means of their early *Sprouting?* This *Plant* may well enough be introduced into the *Parterre*, as it is a ſlow Grower, or in *Wilderneſs Works* for its delightful *Bloſſoms*, but chiefly into a *Winter Garden*. A Loamy *Soil* is moſt proper for it.

SECT. X.

Of the SPIRÆA FRUTEX.

THIS *Plant*, known to the Gardeners by the Name of *Spiræa Frutex*, bloſſoms about *Auguſt*, yielding Spikes of Flowers of a Pink colour; the *Shrub* ſeldom exceeds 3 Foot in height; it is beautiful in its *Flower*, and is a *Plant* which ſhould not be wanting in a Garden. It may be propagated form *Suckers* taken off in *March*, and planted in a light *Soil.*

SECT. XI.

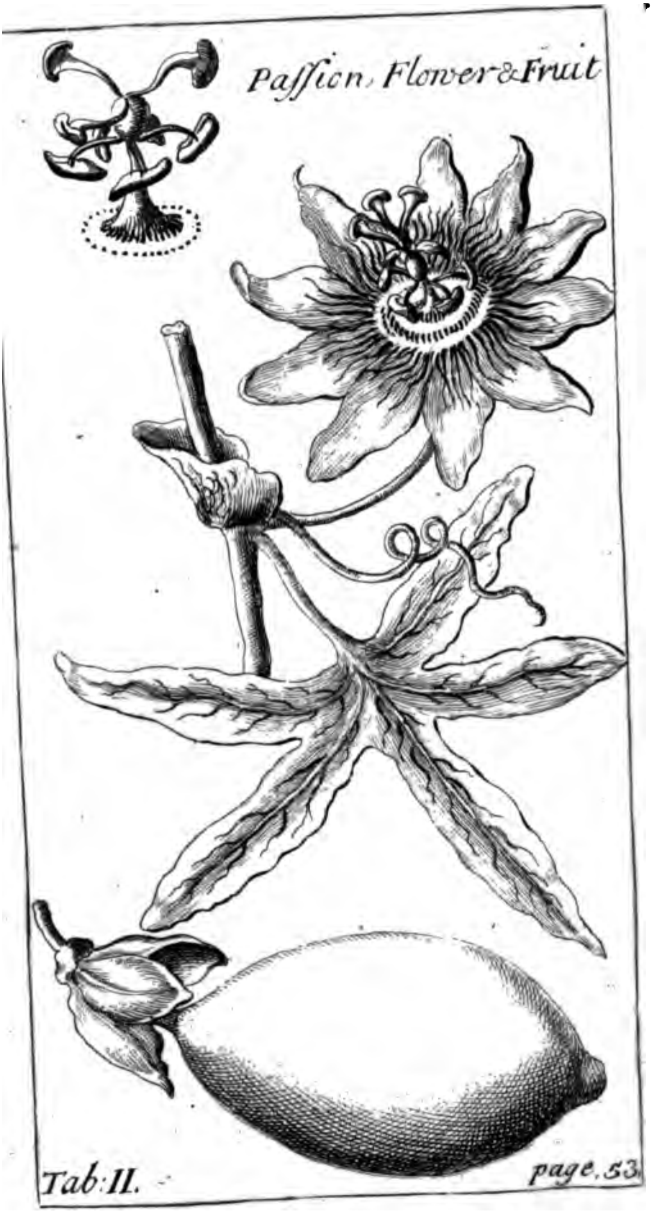
Of the ARBOR JUDÆ.

THis *Plant* is very common in the moſt *Southern* Parts of *Europe*, but I have receiv'd the *Seeds* of it alſo from *America*, (I think from *Virginia*) I have ſown them in *March*, and rais'd great Numbers of them, and they are now common enough in moſt curious Gardens. This *Plant* will riſe very high, even to equal a pretty large *Tree*, but is more frequently planted againſt a Wall with us, than in the open Ground. It bears its beautiful Roſe-colour *Bloſſoms* in Cluſters about *March* or *April*, even before the *Leaves* are open'd. The late Learned Biſhop of *London* eat of the *Flowers* in his Salads, and had a very large Plant of it againſt a Wall in his Garden. The *Plant* is hardy enough to reſiſt our Froſts, and I doubt not but would do well in *Wilderneſs Works*, among other Flowering *Shrubs.* It loves a Loamy *Soil.*

SECT. XII.

Of the Maracoc, *or* Paſſion-Tree.

THere are ſeveral ſorts of *Paſſion-Trees*, ſome of them *Ever-greens*, others *Perdifols*, others dying to the Root every Winter, and others which are annual *Plants*. I have reckon'd near thirty ſorts of them at the Phyſick Garden at *Amſterdam*, where were the greateſt Varieties of them that ever I have ſeen. But as it is not my purpoſe here to particulariſe any ſort of *Plant* which is not capable of reſiſting the Weather of our Climate without Shelter, ſo I ſhall only take Notice of one ſort commonly known to our Gardeners, and endeavour to rectify a Miſtake concerning the *Paſſion-Tree*, which I believe many are poſſeſs'd of. It is ſaid that we have at leaſt two hardy kinds of them in *England*, *viz.* the Fruit-bearing kind, and the common ſort which bears no Fruit; but this is a Miſtake, they are both one, but the difference of Culture makes one Barren, the other Fruitful. But before I proceed to ſet down the Culture of this *Plant*, it may perhaps be expected I ſhould ſay ſomething of the *Flower* and *Fruit* which are ſo remarkable, as well for their ſingular Beauties, as for the ſtrange Account given of the *Flower* by the

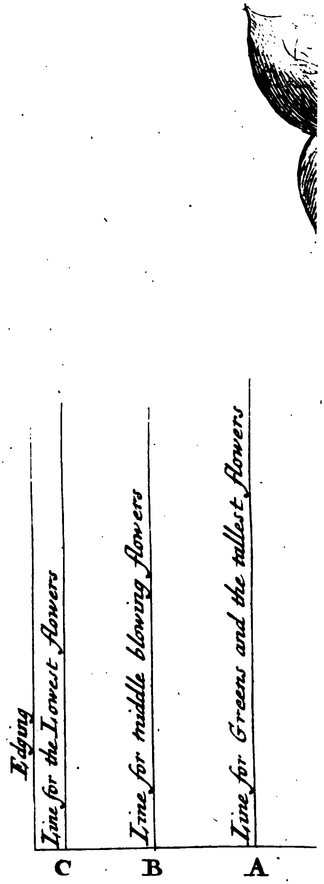

Paſſion, Flower & Fruit
Tab: II.
page. 53.

the *Spaniſh Friers*, upon their firſt Diſcovery of it in the *Weſt-Indies*. The *Flower* is about 4 Inches over when it is full blown; it has ten white *Petals*, within which are placed round about the bottom of the *Stile* two Rows of *ſtamineous-like* Threads of a *purple* Colour; the *Stile*, which ſomewhat reſembles the Pedeſtal of a Pillar, divides it ſelf on the Top into three Parts, which turn their Mouths towards the bottom of the *Flower*; they are of the Colour of *Indigo*; beſides theſe three *Tubes*, juſt below that part of the *Stile* where they unite, are placed five *Stamina*, ſpreading themſelves in a Star-like Figure with yellow *Apices* on their Points. At the Footſtalk of every *Flower* is a *Whirle* or *Claſper*, and to that is join'd the *Leaf* of the *Plant* deeply cut on the Edges. All which ſee in the *Second Table*, of this Part. It is called the *Paſſion-Tree*, for that by the Contrivance of the *Friars*, who in a counterfeit Figure of it, when it was firſt diſcover'd, added ſome things wanting in the Natural *Flower*; they made it as it were an Epitome of our Saviour's Paſſion; the Story perhaps as I have it, may not be unacceptable to my Reader. The ten *Petals*, ſay they, repreſent the ten *Apoſtles*, and at the ſame time put the Queſtion, that there were twelve, but they anſwer, That *Judas* had hang'd himſelf, and *Peter* had deny'd his Maſter: The *ſtamineous-like* Parts, which ſpread themſelves on the Flower, they liken to a *Glory*, and the ſmall *Purple Threads*, which ſtand round the bottom of the *Stile* is a ſuppoſed *Crown of Thorns:* The *Stile* which is in the middle of the Flowers, ſerves them for the *Pillar*, to which they ſay, the *Jews* bound thoſe Malefactors whom they ſcourged; and that they may not want any part of the Story, they turn the *Claſper* into a *Cord*, and the *Leaf* into *a Hand:* The three Diviſions on the Top of the *Stile*, they turn into three *Nails*, and taking off one of the five *Stamina's* with its *Apex*, calls it a Hammer, and the *four* others remaining makes a *Croſs:* the three *Alabaſtries* at the bottom of the Flower, are ſaid to repreſent the *three Soldiers* who caſt Lots; and the time between the *opening* and *ſhutting* up of every *Flower* being juſt *three* Days, is enough to compleat the Story. Thus ſuperſtitious Perſons, *ſemper ſibi ſomnium fingunt.* The Old Herbariſts have mention'd ſomewhat of this Story, but I found it mightily improv'd when I was at *Bruxelles*, even beyond what I have here mention'd.

But to proceed to the Culture of this *Plant*; that it may bear Fruit, we muſt Plant it in very moiſt and cool Places, where it may be continually fed with Water; this I had from the Curious Mr. *Adam Holt*, Gardener to the late Biſhop of *London*, who ſhew'd me a Letter from the *Weſt-Indies*, from whence I learnt it was an Inhabitant of *Swampy* Places. I have ſince that time ſeen a Tree of this ſort with above Three Hundred ripe Fruits upon it, at Mr. *Green*'s, Nurſery-Man at *Brentford*, which was planted in Cow-Dung, and had from time to time the place about it renewed with the ſame cooling Soil. The Fruit were ſhaped like Lemons, and of the ſame Colour; they were fill'd with a beautiful red Pulp and Seeds, like the Fruit of the *Pomgranate*, and were not diſagreeable to the Taſte. But the largeſt Fruit of this *Plant* which I have yet ſeen, was ſent ſome time ſince to the *Royal Society*, by a Curious Gentleman, I think living ſome where in the *Weſt* part of *England*, with an Account of his Method of raiſing them. He had a large *Tree* againſt one ſide of his Houſe, which happening to grow over a drain which went from his Kitchen, and lay ſo ſhallow, that the *Roots* of his *Paſſion Tree* found their way into it, the *Tree* then began to produce Fruit, From theſe Obſervations I was inform'd of the moſt proper way to Cultivate this *Plant* for the Production of its Fruit, and the Directions I have given to ſeveral of my Friends to lay Plenty of Cow-Dung about the Roots, and even then to keep it frequently water'd in the Flowering Seaſon, has been ſufficient to ſhew them Fruit enough to ſatisfie their Curioſity.

We may raiſe this *Plant* either from the Seeds ſown in *March*, or by Layers in the ſame Month; and every Cutting of it about *May* or *June* will ſtrike Root, if they be planted in fine Earth. It is ſo quick in its Growth, that I have ſeen ſome Branches of it about 18 Foot long in one Summer, and is ſo hardy that the moſt ſevere Froſts of our Clime will not deſtroy the Roots, altho' perhaps the *Plant* to all appearance has periſh'd above Ground. In the laſt great Froſt I began to deſpair of two very large *Plants*, which ſtood abroad, and were even cut down to the Ground, without hope of Recovery; but the *May* following, from the Fibres only which remain'd, there ſprung up above 50 ſmall *Plants* from each Root.

The Flower of the


Edging
Line for the Lowest flowers
Line for middle blowing flowers
Line for Greens and the tallest flowers
C
B
A

Tulip Tree. Tab: III.

Fig I

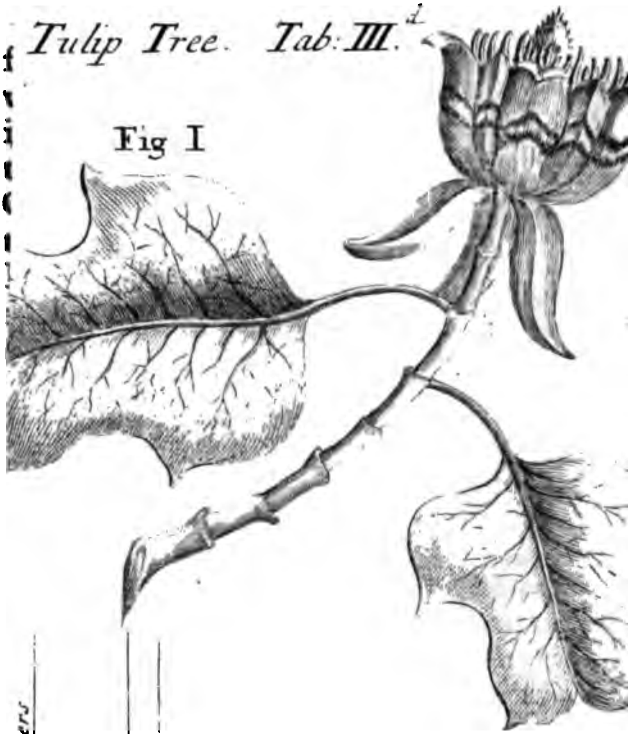
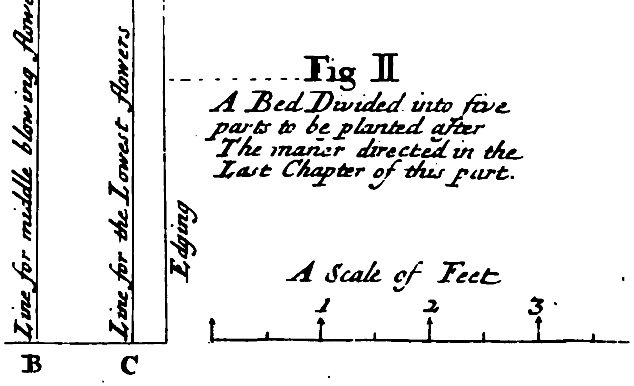


Fig II

A Bed Divided into five parts to be planted after The maner directed in the Last Chapter of this part.



SECT. XIII.

Of the SENNA.

THERE are ſeveral kinds of *Senna*, diſtinguiſh'd by various Names among the Gardeners, but there are only two Sorts of them which are commonly known, and made uſe of, *viz.* the *Scorpion Senna*, the *Bladder Senna*; the firſt is, in my Opinion, the moſt beautiful and deſerving of our Care, the *Bloſſoms* ſhewing themſelves as well in Autumn as in the Spring Seaſon; they both make pretty *Shrubs* for Wilderneſs Works, and may be propagated for that Uſe, either by Sowing the *Seeds* towards the latter End of *March*, or by *Laying* down the tender Twigs in the Earth in *April* or *May*, which ſoon ſtrike *Root*, and may be tranſplanted without Difficulty. They love a *Loamy Earth*, and grow well in the *Shade*.

SECT. XIV.

Of the TULIP-TREE.

I Have already ſaid ſomething of this *Tree* at the beginning of this Chapter, eſpecially concerning that now growing at my Lord *Peterborough*'s. It is a *Plant* of the Wood, and will not proſper abroad in a more open Expoſure, which

I repeat, becauſe it is ſeldom that our Gardeners regard that Nicety in the Cluture of *New Plants.* The *Tulip Tree* ſhould be ſet among ſuch *Trees* as are deſign'd for Groves, it will riſe to as great Height as any of our Timber *Trees.* Its *Leaves* are ſomewhat like thoſe of the *Maple*, and its Flowers, which begin to open in *July*, are only found at the Extremities of the Branches. They have ſome ſmall Reſemblance of a *Tulip*, but not enough, I think, to give the Name to the *Tree.* The *Petals* are of a Yellow Colour, ſomewhat variegated with Vermilion; the Fruit, which ſucceeds them, is like the *Cones* of the *Fir-Tree*, but does not come to Perfection in *England*; however, as we frequently receive good Seeds of it from *Virginia* and *Carolina*, I ſhall give my Reader an experienc'd Method of raiſing them, for it is very difficult to propagate them from Layers. The Ingenious Mr. *Adam Holt*, having receiv'd ſome of the *Cones* of the *Tulip-Tree* from *Virginia*, ſow'd the Seeds of them in Pots about *Auguſt*, and ſet them under Shelter all the Winter, the Spring following they came up without the Help of a hot Bed. This time of Sowing the Seeds is neceſſary to be obſerved, for I have often try'd them in the Spring, but could not raiſe them at that Seaſon. The young *Plants* may be tranſplanted into ſingle Pots at two Years Growth, and muſt have Shelter in the Winter for the firſt nine Years at leaſt, 'till they have Strength enough to reſiſt the Severity of our Froſt; they may then be planted in the Natural Ground, as I have directed, but rather in a ſandy Soil than any other.

SECT. XV.

Of the POMGRENATE.

WE know two Sorts of this *Plant*, *viz.* that with the ſingle Flower, and the double Bloſſom Kind; they are both hardy enough to withſtand the Severities of our Winters, and are propagated by laying down the young Shoots in *March*. The Bloſſoms of each of them are of a moſt beautiful Scarlet Colour, the ſingle ones ſetting frequently for Fruit, and ſometimes ripening with us. I have ſeen ſome headed *Plants* of each ſort, but I rather adviſe them to be planted in Hedges or Wilderneſs Works; where they may be in leſs Danger of the *Knife* or *Sheers*. Some have made *Arbours* of them, which have been extreamly pleaſant. Theſe *Plants* love a light Soil, and may be tranſplanted either in the Spring or Autumn Seaſon.

SECT. XVI.

Of the ALTHEA-FRUTEX.

WE find two Sorts of this *Plant* (commonly) in the Gardens, differing from each other in the Colour of their Flowers, the one White, and the other Purple; they may be propagated from Layers in *September*, or Suckers taken from about the Roots at that time, and likewiſe from the Seeds ſown in *March*, and are uſed chiefly in Wilderneſs Works. The Bloſſoms appear in *May* in great Numbers, and afford a delightful Proſpect; they will grow in any Soil with little Trouble to the Gardener.

SECT. XVII.

Of the Double-bloſſom'd Virgin-bower, *the* Maxechitl *or* Scarlet-Jaſmine, Perwincle, *and* French-Willow.

THE firſt of theſe, *i. e.* the *Virgins-bower*, may be raiſed from Layers in *September*, and ſome ſay from Cuttings likewiſe; the Flowers are of a Violet Colour, and appear in great Numbers, almoſt covering the *Plant*; it loves a light Soil, and as it is of a twining Nature, muſt be ſupported with Stakes. It may either be planted againſt a Wall, or ſet among the other flowering Inhabitants of the Wilderneſs.

The *Maxechitl*, or *Scarlet Jaſmine*, is by ſome Gardeners call'd the *Trumpet Flower*; it is alſo a twining *Plant* like the former, and may be raiſed either from *Layers* or *Cuttings* in *September*; the *Flowers*, which it produces in abundance about *May* or *June*, are rather of an *Orange* Colour than a *Scarlet*; it is commonly planted againſt Walls, tho' I am apt to believe it might maintain it ſelf in Wilderneſs Works, or more open Places. This alſo loves a light *Soil*, and frequent Waterings in the Summer Seaſon.

There are ſeveral ſorts of *Perwincle* cultivated by the Gardeners; it is a creeping *Plant*, eaſily ſtriking *Root*, if it be lay'd in the Earth about *March*, or will grow of *Cuttings* planted in *September*. Its pretty *Blue Flowers* makes an agreeable Show in the Summer; this *Plant* indeed hardly deſerves the Name of a *Shrub*, but as it is not ſtrictly of the *Herbaceous Race*, I take the Liberty to ſpeak of it in this Chapter, and becauſe, when it is ty'd up to Stakes, it may very well be reckon'd a fit Companion for *Flowering Shrubs*; this, with the reſt, may be planted in *Wilderneſs Works*, and in *Pots* (for the Ornament of *Parterres*) to prevent the too great Increaſe of its *Suckers*, which would be apt to over-run the Borders. It delights in moiſt Ground and Shade.

The *French Willow* is alſo one of the Dwarfs of this Chapter, and is rather a greater Increaſer than the former, producing incredible Numbers of *Suckers* about the *Root*, which may be taken off and tranſplanted, either in the *Spring* or *Autumn* Seaſons; if we plant it in *Wilderneſs Works*, it will ſoon over-ſpread the Ground, but if it be deſired in the *Parterre* for the ſake of its pretty Pink-colour *Flowers*, the *Roots* muſt be confin'd in *Pots*.

Thus I think I have mentioned every ſort of *Flowering Shrub* and *Tree* known to the Gardeners, and have given ſuch Directions for their *Culture* and Management in Gardens, as I have my ſelf experienced. I might indeed have added to them the *Berberry* and *Almond*, which produce ſuch agreeable *Flowers*; but as thoſe *Trees* are chiefly celebrated for the *Fruits* they bear, ſo I ſhall not take any further Notice of them 'till I ſpeak of *Fruits* in General. I ſhall conclude this Chapter with taking Notice once more, that every one of the *Flowering Shrubs* I have mentioned, may be cultivated in *Garden-Pots*, and ſo placed from time to time, as they *bloſſom*, in the Borders; by which Method a Gardener may change the Face of his *Parterre* every Week, and ſupply it conſtantly with freſh Beauties.

CHAP. VI.

Of Perannual Flowers, *the talleſt Blowers.*

I Intend in this Chapter to ſpeak of ſuch *Flowers* as remain for many Years in the Ground, *Growing*, *Bloſſoming*, and *Increaſing*; and as they are moſt of them ſuch as will riſe to a conſiderable Height, and therefore the moſt proper to be planted in the middle of Borders, and chiefly in large Gardens. I ſhall ſet down, as near as I can remember, their ſeveral Heights, and recommend that they be planted in Places proportionable to their ſeveral Altitudes, that if it is poſſible one may not find ſuch intollerable Miſtakes as are frequently committed in many Places, of planting Dwarfs in the midſt of a Border, and ſome of the moſt Gigantick Kinds of *Flowers* for *Edgings*; but that in the planting a Border or Bed of *Flowers*, we may judiciouſly mix the ſeveral ſorts, ſo as to have not only ſome of them in *Bloſſom* every Month of the Year, but that they may be ſo diſpoſed as to appear gradually one above the other, and add Beauty to each other by their Variety of Colours; for which end I ſhall add a Figure of a Bed of Earth 4 Foot wide, divided in the manner I propoſe, and ſet down the proper *Flowers* allotted for each Diviſion of it, when I have mentioned the ſeveral Sorts, and their Culture.

SECT. I.

Of the HOLYHOCKS.

THIS *Plant*, as it is always rais'd from *Seeds*, ſo are the *Flowers* commonly different from each other. I have ſeen about 10 ſeveral Sorts of them in one Garden, which if the Syſtem of the *Generation* of *Plants* be true, may happen from accidental Coupling of one with the other; their *Flowers* are commonly double, and ſo cannot perhaps be very eaſily impregnated with other *Farina* than their own, otherwiſe we might have had many more Varieties of them; however as they are, they neither want Beauty nor Stature, ſeldom bearing their Flower Stems leſs than ſix Foot high from the Ground, which are commonly garniſh'd with their Roſe-like *Bloſſoms* above half their Height. Their *Seeds* are ſown in *March* in the natural *Earth*, and tho' they do not lie long in the Ground before they come up, yet they produce no *Flowers* till the following Year. They may be tranſplanted about *September* or *March*, and will begin to Flower in *July* or *Auguſt*; they require a rich Earth, and frequent waterings in the Summer, to make them large. Theſe remain good ſeveral Years, and may for their Duration, as well as their Magnitude, take place among the Flowering Shrubs in Wilderneſs Works, or be planted in Lines in Avenues of Trees, where Cattle cannot come to deſtroy them; ſometimes in the moſt remote or open parts of large Gardens, where their *Red*, *White*, *Purple* or *Black* Flowers afford a beautiful Proſpect. They dye to the Ground every Winter, and ſhoot out again the following Spring, and I am inform'd that ſome have increas'd them by parting their Roots in *March*.

SECT. II.

Of the Per-annual Sun-Flower.

THIS *Plant* bloſſoms about the ſame time with the former, and will bear its *Flower-Stems* near ſix Foot high, if it be encouraged with rich Earth, and well water'd in the Summer Months. The Yellow *Flowers* which it produces reſembling ſo many *Stars*, are very delightful, but are not ſo large as thoſe of the *Annual kind*. It may be Propagated from

Seed ſown in *March*, or *Slips* of the *Root* taken off at that time, and tranſplanted. The Summer *Shoots* of this *Plant*, like thoſe of the former, always periſh at the Approach of Winter, and are ſucceeded by others in the following Spring. It will grow in the Shade and almoſt any Soil; and is even capable of reſiſting the Smoak of *London*; where it is often Cultivated in Pots. It may be planted as a Companion with the *Holly-hock*.

SECT. III.

Of the Aſters *or* Starworts.

THE Curious Botaniſts reckon about twenty ſorts of *Starworts*, and I think I have ſeen the Figures of about 15 different kinds of them. Their ſeveral Names and Deſcriptions would be tedious to my Reader: And ſince they are all Propagated after the ſame manner, the mentioning only of two Sorts, which I eſteem to be preferable to the reſt, may ſuffice for the Inſtruction of any Planter.

That Sort which is the talleſt of the two which I ſhall recommend; is known to the Gardeners by the Name of the *October* Flower, it bears its *Purple* Flowers about *October*, upon *Stalks* of about 4 Foot from the Ground, and is not inferiour in its Beauty to any Flower of the Seaſon. I cannot forbear taking Notice in this place, that the Flowers of the Autumn Seaſon are inclining to the darker Degrees of Colour, this and other *Aſters*, which blow late, produce *Purple Bloſſoms*, the *Saffron Crocus* has Purple Flowers, and the Autumn *Cyclamen* is tending to that Colour; *Stock-July-Flowers*, which Bloſſom about the end of the Year, are all inclining to Purple; and the *Colchicums* likewiſe, which are Autumn-blowing Flowers, are ſtain'd with the ſame Colour. I think it would be well worth the Enquiry of the Curious, whether this Purple which reigns in the Autumn among Flowers, does not proceed from the Quality of the Earth at that time, whoſe pureſt Juices are then exhauſted. But to return to the Culture of this *Aſter*, or *October-Flower*, it is ſo apt to Increaſe in its Roots, that without it be confin'd in Pots, either as I have directed for the foregoing *Plants*, or as a moſt Curious and Learned Gentleman in the Art of Gardening, *Samuel Reynardſon* Eſq; of *Hillingdon*, has been uſed to Plant it (in Pots without bottoms,) it will quickly over-run the Ground; every *Slip* taken from the Root in *March* will grow in any Soil or Expoſure, and make a good Show that Year. It is a fit Companion for the talleſt Flowers.

SECT. VI.

Of the PRIMROSE-TREE.

THE *Primroſe-Tree*, ſo call'd by the Gardeners becauſe the Bloſſoms are ſomewhat like thoſe of the common *Primroſe* in Smell, Shape, and Colour, the Flower-ſtems will ſometimes riſe near three Foot high, and produces Flowers in *June*, the Seed is ripe about *Auguſt*, and muſt be ſown in the Natural Ground in *March* towards the latter end of the Month. The Seedling *Plants* will not Bloſſom till the ſecond Year, therefore ſhould be ſown in a Nurſery, and the young *Plants* removed to proper places the *Auguſt*, after they are come up. This *Plant* alſo is proper for the middle of Borders in large Gardens, and will grow in any Soil.

SECT. VII.

Of the LILLYS *and* MARTAGONS.

ALtho' the *Lilly* and *Martagon* are properly bulbous Rooted *Plants*, yet for their Extraordinay Stature above all other Bulbs that I know, ſhall place 'em among the Giants of this Chapter, and beſides, as their Roots flouriſh the better for remaining conſtantly in the Ground, I think, they may well enough take place among the *Plants* I am now deſcribing. The *Lillys*, are what I ſhall firſt examine, of which there are many kinds, *viz.* the *Common White Lillys*, the *Double-Bloſſom'd White Lilly*, the *Strip'd Lilly*, the *Orange Lilly*, and that kind which produces *Bulbs* upon its Flower Stalks. Theſe *Lillys* are all of them propagated after the ſame manner, by parting their *Roots* when the *Leaves* are vacant about *July* or in *Auguſt*; they all of them blow about the ſame time, in *May* and *June*, upon Flower Stems of 3 Foot high, or thereabout, and equally delight in open *Sandy Soil*; they are very proper *Plants* for the middle of Borders in great Gardens, or to be planted under Hedges in long Walks, except the *Strip'd White Lilly*, which is yet Rariety enough to deſerve a Place in the niceſt, and even the ſmalleſt Garden. But of theſe ſeparately.

Firſt, the *White Lillys*, whether with ſingle or double Flowers, have no other difference than in the make of their Bloſſoms; that with *Single Flowers* is in my Opinion preferable to the other, which is call'd the *Double Bloſſom*; the *Firſt* has large perfect *Flowers* in good Quantities, and the *other* miſ-ſhapen *Bloſſoms* without any other Deſert than their Novelty. What is call'd the *Strip'd White Lilly* differs only from the Common Sort with ſingle

Bloſſoms, in having its *Leaves* curiouſly *Edged* with a *Cream Colour*; it is ſo Beautiful in the Winter, that few of the gayeſt *Plants* exceed it.

The *Orange Lilly*, ſo call'd from the Colour of its Flowers is very Ornamental in Gardens, and a very proper Companion for the *White Lilly*, and makes an agreeable Mixture with it; and the other, which bears its *Bulbs* on the Flower-Stalks, is very deſirable for its beautiful Red Flowers, as well as for its ſingular way of producing its Increaſe. It would be well worth our Enquiry, from whence theſe *Bulbs* have their riſe, whether they do not proceed from *Female Bloſſoms* impregnated by the *farina* of the *Flowers*; I own it is a Caſe which I have not yet duly conſider'd, but I hope I ſhall be able to give a better Account of it, when I have examin'd it more ſtrictly; and I could wiſh every curious Reader would communicate his Obſervations upon caſes of this kind, directed for me at Mr. *Mears*'s the Publiſher of theſe Papers, that by a mutual Correſpondence of Curious Men, many Myſteries in Planting might perhaps be diſcover'd and brought to light, for the Profit and Pleaſure of Mankind, which is the chief End I aim at in theſe Papers.

The *Martagons*, called by ſome Gardeners, *Turks Turbants*, or *Curl'd Lillies*, differ from the *Lillies* I have already mentioned in the Frame and Order of their *Flowers*; the *Bloſſoms* of the *Martagons* hang downward, and have their *Petals*, or *Flower-leaves*, curl'd or turn'd up, which the *Lillies* have not; but the *Roots*, *Flower-ſtems* and *Leaves* are not unlike thoſe of the *Lilly*; and in reſpect to their Culture are order'd in the ſame manner, and love a light Sandy *Soil.* They moſt of them blow about two Foot high, except the *Virginian Martagon*, which is commonly three Foot in its Flower-ſtem; their *Flowers* are of ſeveral Colours, ſome *Yellow*, others *Scarlet*, and variouſly ſpotted, but the *Virginian* Kind far exceeds all the others for its beautiful *Flowers*, and is found but in few Places. They are all of them proper for *Parterres.*

SECT. VIII.

Of the FOXGLOVE.

THE curious Gardeners cultivate three ſorts of *Foxgloves*; the firſt or talleſt ſort they call *Iron*-colour'd *Foxglove*, the other two are diſtinguiſh'd likewiſe by the Colours of their *Flowers*, *viz.* the *Purple* and the *White*; they are all of them rais'd from *Seed* ſown in *March*, but do not Bloſſom 'till the ſecond Year after *Sowing*, the *Flowers* commonly appear in *May* and *June*. The firſt blows about 4 or 5 Foot high, the other two about 3 Foot. Theſe *Plants* delight in the Shade, and thrive well in a Loamy *Soil*.

SECT. IX.

Of Mulleins *and* Moth Mulleins.

THeſe kinds of *Plants* are very rampant, and therefore very proper Companions for the others of this Chapter, few of them *Bloſſoming* lower than four Foot, but ſome ſix Foot high, they are all raiſed from *Seeds* ſown in *Autumn*; or if Conveniency will not permit at that time, *March* will ſerve; they delight in ſandy Soil and ſhady Places; and altho' they are moſt of them wild *Plants*, yet the beautiful Spikes of *Flowers*, which they produce in the Summer, renders them worthy our Regard. There are many kinds of them bearing *Flowers* of different Colours, ſome *White*, others *Yellow*, *Red*, *Brown*, *Purple*, *Black* and *Green*, ſo that I ſee no reaſon why they ſhould not be cultivated among other tall *Plants* in large Gardens. They *Bloſſom* the ſecond Year after *Sowing*.

SECT. X.

Of the ACANTHUS.

THIS *Plant* is very rarely found in the Gardens about *London*, and I do not remember to have ſeen it in above four Gardens in *England*, notwithſtanding its Curioſity and eaſy Culture. The *Flowers* appear in *June* upon Stalks of above two Foot high; they are ſhap'd like the *Bloſſoms* of the *Foxglove*, and are of a *Peach-Bloom* Colour; the Leaves of the *Plant* alſo are not without their Beauties, full of Thorns as any *Thiſtle*, and prettily variegated. The *Seeds* muſt be ſown in *March*, but will not *bloſſom* until the 2d or 3d Year; they love a ſandy *Soil* and Shade.

SECT. XI.

Of the White Hellebore.

THERE are two Kinds of the *White Hellebore*, one with *Rediſh Black Flowers*, and the other with *Greeniſh Flowers*; the firſt bloſſoms in *May*, and the other the following Month; the *Leaves*, *Roots* and *Stature* of both Kinds, are much alike; both having curl'd plated *Leaves*, and *bloſſoming* about four Foot high. The Leaves are of themſelves a pretty Ornament, and the large Spikes of their *Flowers* are ſurprizingly beautiful for their odd Colours; they both die to the *Root* in *Winter*, and are propagated from Off-ſetts parted in *March*, and planted in a rich light *Soil*. Theſe *Plants* are proper for large Gardens, and with them I ſhall conclude this Chapter, and proceed to treat of ſuch *Flowers* as are leſs rampant, and take up leſs Room in Gardens.

CHAP. V.

Of middle-ſiz'd Per-annual Flowers.

IN this Chapter I ſhall mention ſuch *Per-annual Flowers* as are of middle Stature, and leſs rampant than the former, and conſequently are proper Inhabitants for ſmaller Gardens; the firſt I ſhall treat of is the *Valerian*, and its Kinds.

SECT. I.

Of the VALERIAN.

THere are three *Plants* known to the Gardeners by the Name of *Valerian*, and diſtinguiſh'd from one another as follows, *Dodineus*'s or *Red Valerian*, *Garden* or *White Valerian*, and the *Greek Valerian*; all theſe bloſſom about the ſame time of the Year, in *May* and *June*, and may be raiſed from *Seeds* ſown in *March*. The firſt, *i. e.* the *Red Valerian*, is of leſs Duration than the other two, it bloſſoms about two Foot high, bearing great Quantities of ſmall *Red Flowers :* I have not try'd whether it is increas'd by parting the *Roots*, but have propagated many *Plants* of the other Kinds that way in *March*. The *Garden Valerian* bloſſoms about the height of the former, bearing Tufts of *White Flowers*, and has this Quality which is found in the firſt, that the *Root* when it is broken, yields an agreeable Odour. The third ſort, or *Greek Valerian*, bloſſoms about a Foot high, bearing pale *Blue Flowers* in Bunches on the top of its Flower-Stems. This is a fiberous-rooted *Plant*, very eaſily encreas'd by Slips. I have ſeen this ſort with variegated Leaves common enough in ſeveral Gardens.

SECT. II.

Of the Per-annual Cyanus, *or* Blue-bottle.

THIS *Plant* is either raiſed from *Seeds*, or propagated from *Slips* taken from the *Root* in *March* ; the *Flowers* are valuable, chiefly for their fair *Blue* Colour, which is the moſt rare of any other in the Flowers of *Plants* ; the Flower Stalks are commonly about two Foot high, *bloſſom-*

ing in *May* and *June*; and frequently in *Autumn*; this *Plant* loves a light natural *Soil*, and an open Expoſure.

SECT. III.

Of the Monks-Hood, *or Blue* Helmet-Flower.

THIS *Flower* is very common in the Gardens remote from *London*, but in thoſe near the City it is rarely found; the *Flowers* are of a deep *Blue*, and of a ſurprizing Make; they appear upon Stalks of about two Foot high in *May* and *June*, and are ſo poiſonous, that I have heard the eating only 6 or 7 of the *Bloſſoms* in a Salad, has kill'd a Gentleman in *France*, who was not appriſed of their evil Quality; it is ſaid that where they grow wild, no Cattle will touch them; and that the ſort of Inſect natural to this *Plant*, is an Antidote againſt the Biting of all venomous Creatures; we may propagate this *Flower* by parting the *Roots* in *March*. It delights in a Loamy *Soil*, and Shade.

SECT. IV.

Of the ROSE-CAMPION.

THERE are three Sorts of *Roſe-Campion* cultivated in our Gardens, the Red and *White-flowering* Kinds, and the

Red Double Bloſſom, they all of them blow about a Foot and half high in *June* and *July*; the firſt two Sorts are raiſed from Seeds ſown in *March*, or from *Slips* taken from the Root at that time; and the Double Bloſſom kind, which produces no Seed, is only propagated by *Slips* in the ſame Month; this laſt is a deſirable *Plant* for the extraordinary Colour of its Flowers, which is the moſt dazling Red I have ever ſeen. A Loamy Soil and open Expoſure is the moſt proper for them.

SECT. V.

Of the Double-Flower'd ROCKET.

THE Gardeners know two ſorts of double *Rockets*, the *White Flowering* ſort, and that with the *Fleſh-Colour* Flowers; they both blow in *May* upon Stalks of about a Foot and half high; the *White Flowering* kind is more eſteem'd than the other, and more commonly found in Gardens, theſe are propagated from *Slips* taken from about the Root, and planted in *March* in Loamy Soil, they delight in an open Expoſure.

SECT.

SECT. VI.

Of BATCHELORS-BUTTONS.

THE Flower call'd by the Gardeners the *Batchelors-Buttons*, is of two kinds, I mean only ſuch as are cultivated in Gardens, for there are other ſorts of them which grow wild, and bear only ragged ſingle Flowers, and are not thought worthy our Care. Theſe double Flowering kinds are only different from each other in the Colour of their Flowers, the one Red and the other White; the firſt is common enough in moſt Gardens, but the White is more rarely found; they produce their Bloſſoms in *June* and *July*, upon Stalks of two Foot high. Theſe *Plants* love Shade and a Loamy Soil, and are propagated by parting the Roots in *March*.

SECT. VII.

Of the SCARLET-LYCHNIS.

THE *Scarlet-Lychnis* is a *Plant* ſo Beautiful, that it cannot well be wanting in our Garden; the *Single-Flowering* ſort, as well as the *Double kind*, are both very delightful to the Eye, they bear their *Truſſes* of *Scarlet Flowers* upon Stalks ſomewhat more than two Foot high in *June* and *July*, and are ſo much eſteem'd, eſpecially the *double ſort*, that Gardeners uſually cultivate them in Pots for the niceſt Quarters of their Gardens, or to ſet in Chimneys in the Summer: This *double kind* is increas'd by ſlipping the Root in *March*, and that with the *ſingle Flower* may be propagated after the ſame manner, or raiſed in that Month from Seeds, which I think bloſſom the firſt Year: They love an open Expoſure, and a light natural Soil.

SECT. VIII.

Of the SWEET WILLIAM.

OF this Plant there are two Sorts with *ſingle* Flowers, and a *double* Kind, commonly cultivated in Gardens; the *ſingle* ones differ only in the Colour of their Flowers, the one has *Truſſes* of Bloſſoms variegated with Red and White; and the other, Cluſters of Flowers of a deep Crimſon Colour. Theſe two bear their Bloſſoms in *June* and *July*, upon Stalks of two Foot high; and the *double flowering* Kind produces its beautiful red Flowers in the ſame Months upon ſhorter Stems. The firſt two Kinds, *viz.* thoſe with the *ſingle* Flowers, may be rais'd from Seeds ſown in *March*, and will bloſſom the ſecond Year; but the *double ſort* is only propagated from Slips taken near the Root about *March* or *April*, and planted in a

Loamy Earth, which they delight in. The others may be alſo increas'd after the ſame manner, or may be lay'd down in the Earth like *Carnation* Layers.

SECT. IX.

Of the CARNATION *or* JULY-FLOWER, *Vulg.* GILLYFLOWER, *and* PINKS *their ſeveral Kinds.*

THis admirable Flower is of all others the moſt delightful, as well for the agreeable Scent as for its beautiful Colours; the Varieties of it are hardly to be number'd, every Year producing new Sorts of it from Seeds. The Gardeners divide it into Five Claſſes, which they diſtinguiſh by the Name of *Picketees*, *Painted Ladies*, *Beazarts*, *Flakes*, and *Flames:* The Flowers of the *Picketees* are always of a white Ground, *ſpotted* or *pounced* (as they call it) with *Red* or *Purple*: The *Painted Ladies* have their *Petals* tinged on the upper Side, either with *Red* or *Purple*, and the under Side of their Flower-leaves is plain White; the Flowers of the *Beazarts* are ſtrip'd, or variegated with four diſtinct Colours; the *Flakes* are of two Colours only, and thoſe always ſtrip'd; and the *Flames* have a red Ground always ſtrip'd with black or very dark Colours. Each of theſe *Tribes* is very numerous, but the *Picketees* chiefly, ly, of which I have ſeen above one Hundred different ſorts in one Garden, every one diſtinguiſh'd by the *Name* or *Title* of ſome Perſon of *Note* or *Quality*. The *Floriſts* likewiſe mark the Properties of theſe Flowers by the Shape of their *Flower Pods*; that Race of them which blow without burſting are call'd *long podded* Flowers; and the other, whoſe *Petals* cannot contain themſelves within the Bounds of the *Chalyx*, are call'd *round podded* Flowers. I have meaſur'd the Bloſſoms of ſome of the laſt Kinds above four Inches over, but have heard of ſome that were larger. Theſe Flowers are not of any certain height, ſome of them blowing near four Foot, and others not two Foot high, and the Times of their Flowering is alſo as uncertain as their Stature, ſome of them beginning their Bloſſoms in *June*, others not till near *Auguſt*; but this happens from the different Seaſons of ſowing the Seed; thoſe which are put into the Ground about *March* will blow ſooner than thoſe ſown in *May*; altho' they do not bloſſom till the ſecond Year; however, the height of their *Bloom* is about the Middle of *June*, and it is then the *Floriſts* have their grand Aſſembly, to ſhew their Varieties and name their new Curioſities. Theſe Flowers are propagated either from Seeds or Layers, and as they are ſo particularly admir'd by all

Lovers of a Garden, I ſhall be the more exact in the Method of their Culture; Firſt then, to begin with their *Seeds* and Manner of Sowing them; my Reader may remember that in the ſecond Chapter of my firſt Part, concerning the Generation of Plants, I have endeavour'd to explain how the *Duſt* of one Flower will impregnate and enliven the *Seeds* of another, and that from that accidental Coupling the Seeds are ſo chang'd, as to produce Plants with Bloſſoms varying from thoſe of the Mother-plant. I have likewiſe ſhewn why double Flowers ſeldom bear Seed, which I conjecture is becauſe the *Male Parts* in them are either not perfect, or elſe are confin'd from Action by the Multiplicity of the *Petals*. This Conſideration leads me to adviſe the Curious Floriſts to plant of every good ſort of his double *Carnations* in Beds on a Line in the Middle, and on each Side of them to ſet at leaſt two Rows of ſingle ones of choice Colours, and among them ſome Plants of *Sweet William*, and of the *China* or *Indian Pinks*, which have ſuch Varieties of odd Colours in them, as I ſhall mention hereafter. The *China Pinks* and the *Sweet Williams*, bearing ſingle Flowers, as well as the ſingle *Carnations*, may have Opportunities of communicating their *Farina* into the Cells of the double ones, and ſet their Seeds, which if they do, we ſhall not only gather a larger Quantity than we could otherwiſe expect, but likewiſe be aſſur'd of great Varieties from them. If we have good Fortune enough to find the *Seed-Veſſels* begin to ſwell, we muſt guard them carefully againſt two Evils, *Earwigs* and *Wet*; the firſt may be deſtroy'd by hanging Hoggs-Hoofs, the Bowls of Tobacco-Pipes, or Lobſters Claws, on the Tops of the Sticks which ſupport the Flowers, and killing the Vermin, which will lodge in them, every Morning. And to preſerve the ſwelling *Fruit* from rotting by too much *Wet*, ſhelter the Flowers with little Baſons or Trenchers, which will likewiſe ſerve to keep off the too great Heat of the Sun, which would hinder their Growth. With this Care you may expect to find the *Seeds* ready to gather towards the latter end of *September*; this Work muſt be done when the Weather is dry, if poſſible, leaſt after all our Pains they grow mouldy and decay. Gather the Seeds with the Stalks they grow upon, and let them remain in that State expos'd to the Sun through a Glaſs for a Month or two, without opening any of the *Husks* or *Seed-Veſſels* till the Time they are to be ſown, which according to my Opinion is beſt done in *April* in the following Compoſt.

Take two Load of ſandy Loam (as the Gardeners call it) or of my Medium Soil, to which add one Load of well conſumed Melon Earth; ſift theſe well together, and let your Heap lie for a time, to mellow, then ſift it a ſecond time, either to ſow the *Carnation* Seeds in, or to plant your *Layers* or *Roots* of them upon. Having fill'd your Pots with this Earth, and ſmooth'd it on the top, ſprinkle on your *Seeds*, and covering them half an Inch with the ſame Compoſt, preſs it gently with a Board, and let them ſtand expoſed to the Weather, the Seed will be up in about three Weeks, and the young *Plants* big enough to tranſplant into Beds the *July* following; they muſt be ſet about ten Inches diſtant from one another, and ſhaded from the Sun with Matts for about three Weeks, uncovering them every Evening for the Benefit of the refreſhing Dews. The ſecond Year after Sowing you may expect many Varieties from the ſeedling Plants, and 'tis in this the great Pleaſure of Gardening conſiſts. Whatever Rarities you find in this Nurſery, muſt be *laid* down ſo ſoon as poſſible, by cutting half thro' a *Joynt* and ſplitting the *Internode* upwards half way to the other *Joynt* above it; then muſt the wounded Part be bury'd in the Earth, and faſten'd down with a Hook of Wood, till it ſtrikes Root and can ſhift for it ſelf, which will be in two Months time, if the Earth be light. But as the time of laying down the *Layers* of the Seedlings is uncertain, in that we cannot know which are deſerving of that Trouble; therefore I ſhall take notice, that the moſt proper Seaſon for this Work is in *July*, ſo ſoon as the *Layers* are big enough for that Operation, that they may get *Roots* betimes to be taken from their Stocks, and tranſplanted early in the Autumn, where they are to remain all Winter. Tho' ſome rather chuſe to leave them on the old Roots till *March*, before they tranſplant them; but that I cannot approve of, becauſe I have experienced, that the Removal of theſe *Flowers* in the Spring often endangers them, and makes them blow late and weak; whereas on the contrary, if when we take of the *Layers* in Autumn, we then *plant* them either in the Pots or Borders where they are to blow, we are certain of their Bloſſoming ſomewhat earlier, and much ſtronger; and beſides, their *Increaſe* or *Layers* will be in a fit Condition to lay down betimes. However, whether we *plant* out theſe *Flowers* in Autum or in the Spring, it will be neceſſary to acquaint the Planter that they ſhould be ſhaded or defended from the Sun for a Fortnight after Planting, and during the Winter, ſhould always be nigh ſome Place of Shelter in caſe of ſevere Froſts. It remains now for me to ſay ſomething of the *Blowing* of a *Flower* as it is practiſed by the moſt Ingenious *Floriſts*; about *April*, when the Flower-ſtems begin to put forth, (or *Spindle*, as the Gardeners term it) we muſt place by each Flower a ſtraight Stick of about four Foot long, and tie the *Spindles* to it as they ſhoot: So ſoon as the *Flower-buds* appear, leave only one of the largeſt upon each Flower-ſtem to *bloſſom*, about ten Days before the *Flowers* open themſelves, the *round podded* Kinds will begin to crack their Husks on one ſide, then muſt the careful Gardener, with a fine Needle, ſplit or open the Husk on the oppoſite ſide to the Natural Fraction, and about three or four Days before the compleat opening of the Flower, muſt cut off with a pair of ſharp Scizzars, the Points on the top of the Flower Pod, and ſupply the Vacancies, or the Openings, on each ſide of the Huſk with two ſmall pieces of Velom, or Oil-cloth, which he may eaſily ſlip in between the *Flower Leaves* and the inſide of the *Huſk*; ſo will the *Bloſſom* diſplay its Parts equally on all ſides, and be of a regular Figure; but beſides this Care, it is a common Practice, and with very good Reaſon, when the *Bloſſom* begins to ſhew its Colours, to ſhade it from the extream Heat of the Sun, either with a trencher-like Board, or ſome other Device of the like Nature, faſten'd to the Stick that ſupports it, *for Flowers as well as Fruits grow larger in the Shade, and ripen and decay ſooneſt in the Sun.* Thus I have done my beſt Endeavour to inform the Curious Gardener of the moſt proper method for Increaſing and Improving of this Flower; but am obliged, before I conclude this Section, to mention the ſeveral ſorts of *Pinks* proper for Gardens, which are of the ſame Family with the *Carnation.*

The *Pinks* moſt commonly Cultivated in Gardens are the *Red Double-Pink*, the *White Double-Pink*, the *Double-Phaeaſant-Eye-Pink*, the *Dwarf Double-Mountain-Pink*, and the *China-Pink*; beſides the common ſingle ones rais'd from Seed ſown in *Drills*, or *Lines* about *March.* The firſt three of theſe blow about a Foot and half high, and altho' they have been frequently uſed for Edgings in Gardens; yet I ſhall take the freedom to direct them rather for the Inſide of Borders, where they ſhould be planted in Spots, they are too apt to grow irregular in Edgings. The *Dwarf-Mountain-Pink* indeed, as it is a ſlow Grower, and is ſeldom above eight Inches high, may well enough be placed on the out ſides of Garden-beds;

but that Sort is now rarely found. Theſe four kinds of *Pinks* are all raiſed from *Slips* planted in *Auguſt*, or very early in the Spring. The *China-Pink* is admirable for its ſtrange Variety of odd Colours, and its ſurprizing Variegations in the middle of its *Flowers*; this ſort is yet a Novelty with us, and to be met with only in ſome Curious Gardens; it is raiſed from Seeds ſown in *March*, and (I think) *Bloſſoms* the firſt Year about a Foot high, and will reſiſt the Froſts of our Climate, if the Flower-ſtems are cut down ſo ſoon as the *Bloſſom* is over.

SECT. X.

Of the WALL-FLOWER.

I Have ſeen five ſorts of *Wall-Flowers* cultivated by the Gardeners, which are very well deſerving Place among the moſt delightful Flowers, for their pleaſant Odour and laſting Bloſſoms; the moſt common ſort of them is that with the *Double Yellow Flower*, and the more rare kinds are the *Double Yellow* with Variegated *Leaves*, the *Double White*, the *Bloody Wall-Flower*, whoſe Flowers are Yellow and tinged with red, and a new ſort with *large ſingle Flowers* variegated with Yellow and Brown; all which Bloſſom about the ſame Seaſon of the Year, and about two Foot high from the Ground, and may be raiſed from *Slips* planted in ſhady Places, either in *March*, *April*, *May* or *June:* But the laſt Sort may be more eaſily propagated from Seeds ſown in *March*. The Seed Veſſels of this and other ſingle kinds of it, as well as their Flowers, are ſo like thoſe of the *Stock July-Flower*, that I am of Opinion they might be made to Impregnate each other's Seeds if they were planted nigh enough together and from ſuch coupling, perhaps, might be produced a *Stork July-Flower* with Yellow Bloſſoms. It is what I deſign to try, my ſelf, as well as many other Couplings of the like Nature; and altho' the Seed of ſuch a neutral *Plant* would not be made to grow, the Species may be continued and increas'd, by planting *Slips* or *Cuttings* of it, as is common in the Culture of *Double-Stocks*. Theſe *Wall-Flowers* delight in Sandy Soil, or to grow among Rubbiſh.

SECT. XI.

Of STOCK-JULY-FLOWERS. Vulg. GILLY-FLOWERS.

THESE are *Shrubs* like the former, commonly about two Foot high, ſome ſorts of them bloſſoming almoſt all the Year. The ſingle kinds of them are all rais'd from Seeds ſown in *March*, and will come up, and be fit to tranſplant the

Autumn following, but do rarely blow till the ſecond Year, unleſs they be raiſed in Hot Beds, or are of the Annual kind as they call it. Among the Seedlings, we often find *Plants* with double Flowers, which ſhould be carefully tranſplanted into Pots for the Ornament of the niceſt Places in the Garden or to adorn Chimneys in the Summer. The double kinds may be increas'd by *Slips* or *Cuttings* planted in *May*, *June* or *July*; but it is not worth while to propagate the ſingle ones, after any other manner, than from their Seeds. There are five ſorts of them, beſides the *Dwarf* kind or *Annual-Stock* for Edgings. The *White Flowering kind*, that with the *Purple-Flower*, the *ſtrip'd* ſort, the large *Red Brompton Stock*, and that Sort which Bloſſoms the firſt Year; of all which the *Brompton* kind is eſteem'd to be the beſt: The Scent of their Flowers is very grateful, and the ſeveral Colours of their Bloſſoms, if they are well mixt, are extreamly Beautiful. They love a light Natural dry Soil, and are apt to periſh by too much wet in the Winter, therefore it is adviſable to ſow a Young Nurſery of them about *Auguſt*, to blow early the next Year, if the great *Plants* drop off as they did every where in the ſevere Froſt of the laſt Year.

I cannot any where ſo properly as in this place take Notice of an Obſervation which an Ingenious Gentleman has communicated to me concerning the Seeds of *Plants*, and particularly of thoſe of the *Stock July-Flower*; he ſays that he once bought ſome *Stock-Seed* of a Gardener near *London*, which he ſow'd in his Garden in *Oxfordſhire*, and brought him great ſtore of double Flower, and ſome few ſingle ones of an extraordinary Colour and Bigneſs, which were ſo much admired by the Gardeners round about him, that he was continually ſolicited for ſome of their Seeds. He ſaved a large Quantity, and ſupply'd ſeveral curious Perſons with it. What he gave away, maintain'd for the firſt time of ſowing its firſt Excellence, but what he ſow'd in his own Garden loſt its good Qualities. In ſhort, he was now become a Supplicant to thoſe he had ſet up, and from the Seeds they had ſaved he had his firſt good fortune in many *Double-Flowers*, while thoſe who had ſaved the Seeds complain'd of their ill Luck, and were apt to ſay, that if they had not gather'd them with their own Hands, they ſhould have believ'd they had been impoſed upon; at laſt they all agreed mutually to Exchange the Seeds of this and other Flowers annually, and every one had good Succeſs. This, Story, I think, plainly ſhews how much the Change of Air and Soil contributes to improve ſome particular *Vegetables.*

The Annual Stock for Edgings will be more properly introduced in the Chapter relating to other Annuals.

SECT. XII.

Of the French *HONYSUCKLE.*

THIS *Plant* bears Spikes of *Purple-Flowers*, much like thoſe of the *Lupines* in their Figure and manner of growth; it Bloſſoms above a Foot high, and makes an agreeable Show. It is raiſed from Seeds ſown in *March* or *April*, in the Natural Ground, which ſhould be light, and lye expoſed to the *Sun*; the Seedling *Plants* will not Bloſſom till the ſecond Year, and ſometimes not till the third, eſpecially if the Ground be overmoiſt. 'Tis a hardy *Plant*, and will live ſeveral Years.

SECT. XIII.

Of the FLOS-CARDINALIS.

I Have ſeen and Cultivated only two Sorts of the *Cardinal Flower* in *England*; the one blows almoſt three Foot high, with ſlender Stalks, and moſt Beautiful Flowers of a ruby Colour; the other bloſſoms about two Foot High, and bears pale

Blue Flowers, the Seeds of both theſe kinds are brought from *Carolina*, and I think from *Virginia* likewiſe; they muſt be ſown in Hot-beds about *March*, in ſifted light Earth, the Seeds are ſo ſmall, that they muſt be but thinly cover'd with Mold, otherwiſe they will not come up, and the ſame Rule muſt be obſerv'd in the ſowing all manner of Seeds, to cover them with Earth in proportion to their Bigneſs. Theſe *Plants* begin their Bloſſom about the latter end of *July*, and continue Flowering above two Months; they are commonly Cultivated in Pots, as well to give them ſome little Shelter in the moſt ſevere Froſts, as to place them in proper places for Ornament in Houſes, but I am ſatisfied they will grow in open Borders, and thrive very well in ſuch places. In *April* they may be increas'd by parting their Roots, and ſhould be planted in places expoſed to the *Sun*.

CHAP. VI.

Of the Loweſt kinds of Per-annual Flowers.

THE *Plants* which I ſhall treat of in this Chapter are ſuch as are of the ſmalleſt kinds, and therefore the moſt proper for the outſides of Borders or Garden-

Beds, and to be Cultivated in ſmall Gardens; the firſt I ſhall make mention of, is the *Primroſe* and *Cowſlip*, which are by the Gardeners both included in the Name of *Polyanthos*, tho' without reaſon; for the *Primroſe* bears only one Flower upon a Stalk, but the *Cowſlip* indeed anſwers to the Name by bearing *many Flowers* upon a Stem; but Difficulties of this Nature I hope to ſet to rights ſome other time in a *Botanical Nomenclator*. In the mean while I ſhall treat the Gardener in his own Language.

SECT. I.

Of the POLYANTHOS.

THIS ſort of *Plant* is generally divided by the Gardeners into two Claſſes, *viz.* the *Primroſe* kind, and the *Cowſlips*. Theſe are again diſtinguiſht by the terms of *ſingle Flowering*, *double Flowering*, *Hoſe in hoſe*, *Pentaloons*, and *Feathers*. The *ſingle Flowering* ſorts I need not explain, but take notice only that their Colours are chiefly *White*, *Yellow*, *Red*, *Purples*, and ſometimes *Violet Colour*, and frequently variegated in their *Flowers*. The *Double kinds* are not above four in Number that I know of, the *Double Primroſe*, the *Double Paper White Primroſe*, the *Double Red Primroſe*, and *Double*

Cowſlip; the Bloſſoms of which are full of *Petals.*

The *Hoſe in hoſe* Kind has its Bloſſoms one in another, without Caſes. The *Pentaloons* have Green Leaves about their Bloſſoms, which are ſometimes variegated with the ſame Colours of the Flowers they encompaſs; and the *Feathers*, which ſeem by Nature to be at firſt deſign'd for *Hoſe in hoſe*, have their Bloſſoms ſo ſplit and curl'd, that they ſomewhat reſemble Bunches of Feathers. Of theſe there are many Varieties which are multiply'd every Year by ſowing their Seeds; the Curious in this way ſow them in *February*, upon a Place prepar'd with Earth taken out of decay'd Willows, often refreſhing the new-ſown Spot with Water, and keeping it ſhaded from the Sun all *April* and *May*, till the young Plants are above Ground. The Seedlings ſo rais'd, will be fit to tranſplant into Beds the *July* or *Auguſt* after they are ſown; the Soil ſhould be ſomewhat binding, and their Expoſure to the Morning Sun; ſo will they be prepar'd to bloſſom the *March* and *April* following. Theſe Plants may be likewiſe propagated by parting their Roots in *Auguſt*, which is a much better Seaſon for that Work than the *Spring*, altho' it may be done at that time even when they are in Flower. I have obſerv'd that ſuch

Polyanthos's as I have cultivated, began to loſe the Beauty of their Colours, if I let them ſtand two Years without parting, and even then would decline; ſo that I adviſe every one who covets this Plant in Perfection, to ſow them every Year, and tranſplant frequently. The *Primroſe* Kinds of theſe, bloſſom cloſe to the Ground; and the *Cowſlips*, about ſix Inches high; both Sorts may be planted near the Edges of Borders, and near Houſes, for the ſake of their pretty Smell.

But, to leave the Garden a little, I muſt recommend to my Reader the Planting of ſome of the common ſorts, that grow in the Woods, in ſome of the moſt *Rural Places* about his Houſe; for I think nothing can be more delightful than to ſee great Numbers of theſe Flowers, accompany'd with *Violets*, growing under Hedges, Avenues of Trees, and Wilderneſs Works.

SECT. II.

Of the AURICULA.

THIS Flower above all other has been the Pride of the Gardeners, and was ſo much in Eſteem ſome few Years ago, that I have known one Root of it ſold for twenty Guineas; but that was indeed when they began firſt to appear in our

Climate. The Art of raiſing them was diſcover'd and became familiar, and the fooliſh Vanity of diminiſhing a Fortune for a Set of Flowers was then lay'd aſide; and now the Collections which were before without Price, may be purchas'd upon reaſonable Terms. Theſe *Flowers* are indeed very delightful, as well for their ſurpriſing Varieties, as the Fragrancy of their Smell; they bloſſom in *April*, and are in the height of their Bloom about the 20th of that Month; they blow commonly about ſix Inches high. The numerous Varieties of their Flowers are all diſtinguiſh'd by the Names and Titles of Great Men; and I have often thought of a pleaſant Expreſſion of a Friend of mine concerning theſe Flowers and their extravagant Prices, *That the* Auricula's *increas'd ſo faſt, and the Great or Wiſe Men decreas'd ſo faſt, that in a ſhort time this Tribe of Plants would want Men of Note to take their Names from.* But if it is poſſible for us to admire the Beauties of this Flower, when we may raiſe them with little Trouble and a moderate Expence, my Reader may ſupply himſelf with them by following the Directions I ſhall here lay down for their Culture; and that he may be a right Judge of what are good among them when they come to blow, I ſhall preſent him with a Table of their ſeveral good Qualities requir'd by the ſkilful Floriſts. A good *Auricula* ought to have the following Excellencies: *Firſt*, That the *Flower-ſtem* be ſtrong and ſubſtantial: *Secondly*, The *Foot-ſtalks* of the *Flowers* muſt be ſhort, and capable of ſupporting the *Bloſſoms* upright; *Thirdly*, That the *Pipe* or *Neck* of each *Flower* be ſhort; *Fourthly*, That the *Flowers* be large and of a regular form; *Fifthly*, Their *Colours* ſhould be bright and well mixt, *Sixthly*, That the *Eye* be *large*, *round*, and of a good *White*; and *Laſtly*, That the *Flowers* ſpread themſelves flat, and be no ways inclinable to *Cup*.

With theſe Perfections we may account an *Auricula* to be good, and from ſuch only we ought to ſave Seeds for Sowing and Propagating others, if we hope for Succeſs; and as a Help to our Deſign, let us conſult the Chapter relating to the Generation of *Plants*, and improve the Variety, by placing ſuch *Flowers* as are of the moſt different Colours together whilſt they are in *Bloſſom*; that ſo the *Seed-Veſſels* of the one may receive the *Duſt* of the other, and by that means give us an agreeable Mixture of Colours in thoſe *Plants* we raiſe from Seed; and it would be well worth our Enquiry, whether the Seeds thus impregnated partake more of the Shape, or of the Colours of the *Flowers* of the Mother *Plant*; to be certain of which, the *Plant* you make Tryal of muſt be caſtrated of its *Apices*, before they are ripe or burſt open.

The Seeds of this *Flower* ſhould be gather'd ſo ſoon as the Flower-ſtem is Yellow, and the Seed-Veſſels come to their full Growth: In the ſaving and preſerving of their Seeds, as well as all others, I would adviſe, that the whole *Truſs* or *Bunch* of Seed-Veſſels be gather'd with the Flower-ſtem, and remain upon it till the time of Sowing; for certainly nothing contributes more to the Strength and Vigour of *Plants* to be rais'd from Seeds, than a right Method of preſerving ſuch Seeds till the time of Sowing; and what can better inſtruct us in that Method, than Nature it ſelf. Here I ſuppoſe ſome People will find fault with my Advice, and be apt to ſay, that if the *Stems* of the *Auricula's* with the Seed-Veſſels had remain'd upon the *Plant*, the Seeds would have fallen to the Ground, ſo ſoon as they had been ripe, and where is then my Argument, that Nature would keep them cas'd up all the Winter, as I propoſe to do from her Example?

To theſe I anſwer, that the *Seeds* of *Vegetables* are like the *Eggs* of *Fowls*, which after they are perfected in the *Matrices* of either, will only keep good a certain time before they ought to be *Set*, or be put into a proper Poſture for Hatching; the Seeds which fall to the Ground are nouriſhed by the Earth they fall upon, till the proper Ferment begins for their *Vegetation*. And if they are kept in their Cells till a proper Seaſon for ſowing, it is very reaſonable to believe they will find there a natural Nouriſhment; ſince it is known, that thy were perfected from the ſame *Juices* in the ſame *Cells*, and that were they to lie dry in a Chamber for ſix Months, without either Earth or their own natural Nouriſhment to feed from, they muſt certainly loſe their Strength, altho' perhaps they may not entirely decay. But to proceed, the *Seeds* of the *Auricula* ſhould be gather'd in a dry Morning, as I have directed, and laid upon Sheets of Paper in ſuch places where three Hours Sun may paſs over them every Day for near a Month, till they are out of danger of growing mouldy, then may they be laid by in a dry place, till the firſt Week in *February*, at which time the *Seeds* may be *cleans'd* out, and ſown in the following manner.

Prepare a Box of *Oak* or *Deal* four Foot long, two Foot wide, and ſix Inches deep, with Holes in the Bottom ſix Inches diſtant from one another. In this Box lay two Inches thick of *Cinders* of *Sea-Coal*, and over them ſpread ſome fine ſandy Loam the depth of three Inches, over which ſift ſome Earth taken out of hollow *Willow Trees*, till the Box is full, and then ſow the Seeds on the top without any covering of Earth, only preſſing them into the *Mold* with a piece of flat Board to ſettle them below the Edges of the Box, that in Watering, the light Seeds may not float over the Brims; this Seminary muſt be continually refreſh'd with Water, ſo that it never be dry, for without a conſtant Moiſture the *Seeds* will not come up. It is neceſſary to cover the whole with a Net to prevent the Birds from deſtroying the *Seeds*; and likewiſe to acquaint the Gardener, that from the time of Sowing, to the beginning of *April*, the Box ſhould be ſo placed as to receive the Heat of the Sun, but after that time ſhould be removed into ſome ſhady Place, leſt the young Seedling *Plants* be ſcorch'd and wither'd away. But if it ſhould ſo happen thro' the Neglect of Watering, that the Seeds do not come up the firſt Year, let the *Caſe* be preſerv'd till the Year following, and there will certainly be a good Crop, as I have often experienced.

The Seedlings will be ſtrong enough to tranſplant, the *July* or *Auguſt* after they appear above Ground, they ſhould then be planted about four Inches diſtant from one another, in Beds of light Earth well ſifted, where if poſſible they may only enjoy the Morning Sun, and it will be neceſſary to ſhade them even from that Warmth for a Fortnight after Planting. The *April* afterward, you may expect ſome of them will begin to ſhew themſelves; and then as they anſwer the good Qualities I have mention'd, tranſplant them into Pots fill'd with any one of the following Soil.

Firſt, To half a Load of Sea-Sand, add one Load of Loamy Soil, and one Load of Melon Earth, let all theſe be well mix'd and ſifted together.

Second Earth, Take one Load of ſandy Loam, to which add the like Quantity of Melon Earth, mix and ſift them together.

Third Earth, Take of rotted Wood, or the bottom of a Wood-pile one Load; to which add the like Quantity of Loam, and half a Load of Melon Earth prepared as the other Earths.

I have already hinted, in the firſt Part, but I ſhall once more take notice, that all mix'd Soils or Compoſts ſhould lie ſome time for the ſeveral Parts to incorporate with one another before they are uſed. The three Sorts I have here ſet down have been made uſe of by ſeveral Gardeners with Succeſs. I ſhall not pretend to ſay which is the beſt, for I have ſeen *Auricula's* blow well in each of them, therefore ſhall leave my Reader to pleaſe himſelf. I think there remains little more for me to ſay, concerning this *Flower*, than to take notice of the Method commonly uſed in the blowing them, which is thus. Set your Pots upon Shelves, one above another, in ſuch a part of the Garden where the Morning Sun may only come at them, and as theſe *Flowers* are commonly cover'd with a ſort of *Duſt*, which contributes in great meaſure to make them Beautiful, ſome Covering muſt be provided for their Shelter againſt Rains, which are apt to waſh it away, and deſtroy their Colours. The Seaſons for parting their Roots are either when they are in *Flower* or about St. *James*'s Tide, but the latter is judg'd to be the beſt. And now I ſhall conclude this Section of the *Auricula's* with a Word or two of Advice to the Curious Floriſt, that he obſerve to keep them from much wet in the Winter, often taking away their rotted *Leaves*, and that he does not let the firſt Week in *January* paſs (if the Weather will permit) without taking the decay'd Earth from about the Roots of his *Flowers*, and filling up the Pots with freſh, from his heap of prepared Soil. By which means his *Plants* will be ſtrong againſt their Flowering Seaſon.

SECT. III.

Of the Black-Hellebore *or Chriſtmas-Flower.*

OF theſe *Plants* there are reckon'd three Sorts among the Gardeners, which are all *Dwarfs*, and very proper for ſmall Gardens, ſeldom Bloſſoming above half a Foot from the Ground; the moſt forward Blower of them is the *Black Hellebore* with the *White Flower*, which begins to Bloſſom about *Chriſtmas*, and continues till *February*; the ſecond ſort is that with a *Green Flower* Bloſſoming about the ſame time; and the third ſort has a ſmall cut Leaf almoſt like *Fennel*, and bears a *Yellow Flower* in *May*; all theſe are propagated by parting the Roots in *September*, and delight in a Sandy Soil and Shade. I have indeed taken off their Off-ſets, and planted them when they were in Flower; but Autumn is much better. As yet, I have not ſeen any ripe Seeds of theſe *Plants*; but I ſuppoſe it was for want of examining them at due Seaſon; If they bear any, as I am pretty well aſſured they do, the proper Seaſon of ſowing them is ſo ſoon as they are ripe. Every one of theſe ſorts is ſo rare, that they are hardly to be met with, unleſs at Mr. *Fairchild's* at *Hoxton.*

SECT. IV.

Of the GENTIANELLA.

THIS *Plant* is one of the loweſt Race; I have ſeen but one ſort Cultivated in our *Engliſh* Gardens, altho' there are many Varieties of it frequently found in the *Dutch* Collections, and thoſe of Neighbouring Countries; the *Flowers* of that kind which are known to us, almoſt touch the Ground, but are, notwithſtanding their Humility, as great an Ornament to a Garden as any Flower I ever ſaw; their *Bloſſoms* open in *April*, and alſo frequently appear in *November* and *December* if the Weather be open; their admirable *Blue* Colour is hardly to be imitated by *Ultra Marine* it ſelf. This *Plant* delights in a Sandy Soil; where it will put forth many *Slips*, which may be either parted from the Root in *March*, or *Auguſt.*

SECT. V.

Of the HEPATICA.

THE *Hepatica* is of ſeveral kinds, *viz.* that with the ſingle *White* Flower, the ſingle and double *Peach Colour'd* Flowers, and the ſingle and double *Blue*

Flowering-kinds; thoſe with the ſingle Flowers begin their Bloſſom in *January*, if the Weather be open, and the double Flowering Sorts *blow* a Month later; they are encreas'd by parting their Roots either in *April* or *September*, and will only thrive in a light Sandy Soil.

SECT. VI.

Of the VIOLET.

THERE are ſeveral ſorts of *Violets* commonly Cultivated in Gardens; the moſt common of them are the ſingle *Blue* and *White* kinds, the more rare are the double *Blue*, the double *White*, and that ſort with *Variegated Leaves*; all theſe kinds blow in *March*, and beſides their Beauty, perfume the Air with a moſt delightful Odour. The Sorts with double *Flowers* Bloſſom alſo in *Autumn*, if their Roots are ſtrong. Theſe *Plants* may be Increas'd by tranſplanting their *Runners*, which will of themſelves take Root at every Joint without any Art.

The proper Seaſon for this Work is either in *February* or *September*, but the laſt is the beſt. Theſe ſhould be planted among *Primroſes* and *Cowſlips* under Hedges, and the moſt rural Places of the Garden, or near the Edges of Garden-

Beds; they delight in binding Soil and ſhady Places.

SECT. VII.

Of the DASIES.

THE *Daſy* is one of the ſmalleſt *Plants* that grows, its Flowers blowing above three Inches from the Ground. The ſorts commonly known and cultivated in Gardens are, the *Double Red*, the *DouleWhite*, the *Double Red* and *White*, the *Coxcomb* or *Rainbow Daſy*, and the *Hen* and *Chicken Daſy*; the laſt of theſe has little *Stalks* of *Flowers* growing out of the main Bloſſoms; beſides theſe, I have ſeen near fifty different ſorts which were rais'd from Seed in one Year by Mr. *Fairchild* at *Hoxton*, which I ſuppoſe were produced from the coupling of the *Mother Plants* one with another; for which Reaſon I would adviſe every curious Gardener to ſow the Seeds of his beſt *Daſies*, that have ſtood near enough to couple, about *Auguſt* or early in the Spring, that he may furniſh himſelf with Varieties. Theſe *Plants* are encreas'd by parting their Roots either in the Spring or *Autumn* Seaſons, and love a binding Soil. They make pretty Edgings for *Flower-Beds*.

SECT. VIII.

Of Thrift *or* *SEA-GILLYFLOWER.*

I Have had three ſorts of *Thrift*; the *Common*, the *Scarlet Flowering* ſort, and that with the *White Flower*. Theſe are only proper for Edging of large Borders in long Walks, or the moſt rude Parts of Gardens; they Bloſſom in *May*, and continue a long time in *Flower*. We may Propagate them from *Slips* in *Auguſt* or *March*, they love a Strong Soil. *N. B.* the *Sea Pinks* make good Edgings for Long Walks, and may be propagated after the ſame manner as the former.

I have now given my Reader an Account of all the *Per-annual Plants*, which I think are worthy of our Care in Gardens; and ſhall now proceed to give proper Directions for the Culture of the next degree of *Hortulan Plants* with *Bulbous Roots*.

CHAP. VII.

Of Bulbous *or* Onion-*rooted Plants.*

ALTHO' a BULB is properly ſuch a Root as is round and ſucculent, made of many *Tunics* wrapt over each other, like the Root of an *Onion*; yet

cording

according to the Gardeners I ſhall comprehend under the Title of *Bulbous Rooted Plants*, the *Anemonies* and *Ranuncula's*, tho' their Roots differ from the Shape I have deſcrib'd a *Bulb* to be of. I deſign in this Chapter to ſpeak firſt of thoſe *Bulbs* or *dry Roots* (as they are call'd by ſome) which are commonly taken out of the Ground every Year ſo ſoon as their *Stalks* are decay'd.

SECT. I.

Of the TULIP.

THE *Tulip* wants nothing (in my Opinion) but a grateful Scent to make it the fineſt Flower in the World; there are infinite Varieties of it vaſtly different from each other, which diſplay their Beauties and eclipſe the Glories of all other *Plants* of the Garden; theſe Ornaments of Nature are as kind as they are Beautiful, ſome or other of them Bloſſoming from *March* to the latter end of *May*. They are divided into two *Claſſes*, *viz.* the *Præcoce Tulips* or early Blowers, and the *Serotine* or later Blowers; and theſe may be diſtinguiſh'd by their *double* and *ſingle Flowers*. Again, with reſpect to their Colours and Stature, they have other Denominations, as *Bagetts*, which are the talleſt Blowers, commonly *Purples* and *White Marbled*;

Secondly, *Agates*, which blow ſhorter than the former, whoſe Flowers are vein'd with two Colours; and *Thirdly*, *Beazarts*, which have four Colours, tending to *Yellows* and *Reds* of ſeveral ſorts. The Varieties of theſe kinds are ſeverally diſtinguiſh'd by the Names of Cities, or ſuch like Characters. The good Qualities of *Tulips*, which the Gardeners generally approve of, are the Beauties of their *Colours*, the Strength and Height of their *Flower-ſtems*, and that their Flowers be of the Shape of an *Egg* without ſharp Points on the top of their *Petals*, but above all their Novelty.

I have often wonder'd at the Extravagant Prices, which has been, and even at this day is given for thoſe Flowers in *Holland* and *Flanders*, when every Year produces ſo many new Varieties; there are indeed the beſt in thoſe Countries that I have ever ſeen, but I believe if we in *England* took the right way for their Management, we might ſoon boaſt of our good Succeſs, and propagate great Numbers of them at a very Cheap Rate. For this end I ſhall ſet down ſome Tryals I have already made, and offer ſome reaſonable Conjectures, which may yet farther contribute to their Improvement.

The Method of raiſing them from Seeds is what I ſhall firſt offer to my Reader.

The *Flower-ſtems* being left remaining upon the Roots will perfect their Seeds about *July*, which will be fit to gather when the *Seed-Veſſels* begin to *crack* or burſt open. They ſhould then be cut cloſe to the Ground in a dry Day, and lay'd in ſome dry Place till *September*; which is the moſt proper Seaſon for ſowing them, and the following Spring they will come up, if they are kept under Shelter. The firſt Year their Roots will be no bigger than *Wheat Corns*, but after their ſecond Appearance above Ground they may be taken from the *Pot* or *Caſe* they were ſown in, and ſow'd or ſprinkled over a Bed of Natural Sandy Soil well ſifted, where the Thickneſs of half an Inch of the ſame Earth ſhould be ſpread over them; thus may they remain without any other Culture, than adding half an Inch of Earth for their Covering every Year till they begin to blow, which will be in five or ſix Years after ſowing. But let no Man be diſcouraged at the length of time they lie in the Ground without Flowering, the *Plant* will anſwer his Expectation; let him ſow every Year, and he will gain new Varieties ſucceſſively, when his firſt Seminary begins to blow. I have known many fine *Tulips* rais'd by this means, but have once heard of a large Bed of *Seedlings*, which were only of plain Colours without Variagations, but that might happen from the Qualities of thoſe Flowers which the Seeds were ſaved from. But however, if by chance our young Nurſery ſhould prove all of them plain Flowers, we are not yet without Hopes, the Plainneſs of their Colours I ſuppoſe to proceed from a Strength of Nature, as we are ſure the Variegations of all Flowers are the Effects of Weakneſs, and Want of Nouriſhment; for whoever has cultivated thoſe ſorts of *Tulips* which are call'd *Breeders* muſt know they are of plain Colours, and are always large tall blowing *Flowers*, 'tis from thoſe *Breeders* are commonly produced the *Flowers* of the greateſt Value for their Stripes ſake; now and then one of them breaking (as they term it) into beautiful Mixtures of Colour or Variegations. This Alteration of *Tulips* is reckon'd by the Gardeners to be the Effect of Chance; but I believe the two following Obſervations will explain the Myſtery. Near *Bruxeles*, a Man is famous for a little Spot of Ground, in which, by ſome ſtrange Virtue, (as is reported) theſe *Breeding Tulips* change themſelves into fine variegated *Flowers*, inſomuch that their Roots are brought thither from ſeveral Parts, to be educated and brought up for the niceſt Collections, and Money given for their ſtanding. In that Place it is rare if three in five do not break into Stripes, the firſt Year after they are planted ; but this Alteration, I think, may be accounted for, by examining the Soil, which is nothing but common Rubbiſh ſifted ; or at moſt there is not one twentieth part of it Natural Soil.

It is very plain that a Soil of this Nature muſt impoveriſh the Roots that are ſet in it, and conſequently the *Flowers* muſt ſome way or other ſhew the Diſtemper of the Roots from whence they ſpring. And to continue the Variegations of *Tulips*, they are taken out of the Ground every Year ſo ſoon as they have done blowing ; for if they were always to remain in the Earth, they would in time become plain *Flowers*. But, *Secondly*, The other Obſervation I have made concerning the ſtriping of theſe *Flowers*, was in a Gentleman's Garden near *London*, who planted a Bed of *Breeding Tulips*, and the following Year, when they came to blow, he found a fine ſtrip'd *Tulip* at each Corner of the Bed, and none of the others were any ways alter'd ; this I ſuppoſe happen'd from four large *Piramid Yews*, which then grew at the ſeveral Corners of the Bed, and had exhauſted the Natural Strength of the Soil about 'em. I ſhall therefore recommend theſe Obſervations to the ſerious Conſideration of every Ingenious *Floriſt.* And now ſuppoſing that by theſe or any other Means a Gentleman is ſtock'd with a good Collection of Rarities of this Sort, I ſhall proceed to acquaint him of the proper Method of Planting and Cultivating them; and firſt of the Soil.

In *Holland*, where I have ſeen the fineſt Collections of this ſort of *Flower*, the Soil is naturally *ſandy*, as near as I can judge, about two parts in three of Sea Sand to one of common Black Earth; in this Soil only I have ſeen of the *Bagett* kind of *Tulips* bloſſom above three Foot high, and the other ſorts in Proportion. The Curious in that Country always obſerve two things in planting their *Tulips*; the firſt is, to plant all the forward Blowers in a Bed together, and when they plant the late *Flowering* Kinds, they place the talleſt Sorts in the middle Line of the Bed, and of each ſide of them ſet two Row's of the ſhorteſt Blowers; the Seaſon for putting in theſe Roots is always the laſt Week in *Auguſt* if the Weather be fair, they give them little Shelter till the Flower Buds appear, and then they defend them from Blights with Matts or painted Cloth ſtain'd upon Hoops, which *Covering* ſerves alſo for ſheltering the *Flowers*, when they are blown, from Rain and the ſcorching Heat of the Sun, either of which would quickly ſpoil the Bloſſoms. Theſe Roots are always taken out of the Ground, ſo ſoon as their *Flower-ſtems* begin to decay, and being well dry'd are laid up in Paper till the planting Seaſon returns.

N. B. The beſt *Bagett-breeders* are call'd *Bagett Primo's*, and are ſold in *Holland* now for five Pounds *per Hundred.* Theſe *Flowers* are increas'd from Off-ſets which grow about the Roots.

SECT. II.

Of the RANUNCULUS.

THE *Ranunculus*, next to the *Tulip*, is deſirable for its beautiful *Flowers*; there are many Varieties of it brought from *Turkey* every Year, ſo that the Names of every Sort now known in *England* would rather be troubleſom than inſtructive to my Reader. The beſt way will be for him to take a View of the ſeveral curious Collections of them in the Gardens about *London*, when they are in Flower; however, that he may be the better appriſed of what I deſign to treat of in this Section, I ſhall deſcribe ſome few ſorts of them. The *Ranunculus* bears its Bloſſom in *April* and *May*, upon Stalks about ſix or eight Inches high; the *double Flowering* Kinds are crowded with *Petals* after the manner of the *Province-Roſe Flowers*, and ſome of them as large; the Colours of thoſe *Ranunculus*'s I have ſeen are deep *Scarlets* vein'd with *Green* and *Gold* Colours, *Yellow* tip'd with *Red*, *White* ſpotted with *Red*, *Orange* Colours, plain *White*, *Yellow* with *Black*, and one ſort of a *Peach*-bloom Colour; which yet I have only ſeen at Mr. *Blind*'s at *Barns* in *Surry*. The ſingle Kinds blow ſomewhat taller than the others, and are commonly variegated with pleaſant Colours; all theſe are increas'd by Off-ſets found about the Roots when they are taken up, and may likewiſe be propagated from Seeds ſaved from the ſingle Kinds; but as they will not ripen in *England*, we have hitherto been beholding to the *French* for them. The proper Seaſons for ſowing the *Seeds* of this *Plant* is the latter end of *Auguſt*, and the Soil which they moſt delight in, is *rotted Leaves*, or ſuch Soil as may be taken from the Surface of the Earth in Woods or Groves of long ſtanding.

Tanners-bark, or the bottom of a *Wood-pile*, are likewiſe very proper Earths for theſe *Flowers*, if they are well ſifted and mix'd with one third Part of Natural Soil. Theſe *Plants* are ſomewhat tender, and require ſome Shelter in the Winter; eſpecially if they have began to ſpring before ſore the Froſts. The Seedling *Plants* come up the Spring after they are ſown, and bloſſom the ſecond Year; when they are out of *Flower*, and the *Stalks* and *Leaves* are decay'd, their Roots ſhould be taken out of the Ground, and being well dry'd in the Sun muſt be preſerv'd in dry Sand till the latter end of *September*, which is the beſt time for re-planting them, if the Ground be not over wet.

SECT. III.

Of ANEMONIES.

OF this kind of *Plant* there are many Varieties, as well with *ſingle* as with *double Flowers*. Their Colours are chiefly *Reds*, *Blues* and *Purples*; their Bloſſoms, which are ſeldom above five or ſix Inches from the Ground, open themſelves about *April*; and if the Roots are ſuffer'd to remain in the Earth, they will again repeat their *Flowers* in *September*, and continue blowing the greateſt part of the Winter; but it is ſeldom that the Gardeners will leave any of their choice *Anemony* Roots in the Earth, after their Spring Bloſſom is over, leaſt they decay by too much Wet, which is frequent enough in our Climate in the Summer Seaſon. The Roots of theſe *Plants* ſhould be taken out of the Ground, and preſerv'd and replanted, ed, like thoſe of the *Ranunculus*, with this difference only, that *Anemony* Roots ſhould be increas'd by breaking the *Knots* aſunder, which are about the bigneſs of a ſmall Button, and planting them after they have laid two or three Days in the Sun. Theſe *Flowers* love a ſandy Soil without any Mixture; chiefly ſuch as is found about *Baterſea* in *Surry*; where they blow very large. The Seeds of the *ſingle* Kinds ripen about the latter end of *May*, and ſhould be carefully gather'd ſo ſoon as they begin to *crack* or ſhow their *Down*, otherwiſe the leaſt Wind will carry them away. From them we may raiſe innumerable Varieties, if they are ſown in *February*, and lightly cover'd with Earth. They blow the ſecond Year after Sowing.

SECT. IV.

Of the Jonquil, Narciſſus Polyanthos, *and others of the ſame Tribe.*

THE *Jonquil* is a *Flower* generally admir'd for its delightful *Scent*; the *double* Kind bloſſoms in *April*, and that with the *ſingle Flower* ſomewhat ſooner; the *Roots*, which are *bulbous* like thoſe of the *Tulip*, love a light ſandy Soil and an open Expoſure; they ſhould be taken out of the Ground and replanted like other *Bulbs*; and in like manner ſhould be order'd the *Narciſſus Polyanthos*, whoſe ſweet *Scented Flowers* are not leſs deſirable than *Jonquils*. Theſe, with all other kinds of *Narciſſus*, are propagated from *Off-ſets* of their *Roots*. Next to thoſe I have mention'd in this Section, the *double White* and *double Yellow Narciſſus* are worthy our Eſteem; and even the common *Daffodil* is to be admir'd for its pretty Ornament in rural Parts of the Garden. All theſe bloſſom in the Spring about a Foot high.

SECT. V.

Of the HYACINTH.

THere are many kinds of *Hyacinth*, ſome with *ſingle Blue Flowers*, and others with *ſingle White Flowers*, and with *double Flowers* of both thoſe Colours; the *Grape Hyacinth* and *Starry Hyacinth* have alſo their Varieties; all which, as well as the *Hyacinth* of *Peru*, will bear the Severity of our Froſt; all of them, except the laſt, blow early in the Spring, and are moſt of them well Scented; they are increas'd from *Off-ſets* of the *Roots* planted in *September* in Beds of Sandy Soil, the *Flower-*

ing-ſtems of theſe *Plants*, except the *Hyacinth of Peru*, are ſeldom more than half a Foot high from the Ground.

SECT. VI.

Of the CYCLAMEN *or* SOW-BREAD.

I Have ſeen near thirty ſorts of this *Flower* in the *Amſterdam Gardens*, but in *England* we have not above four ſorts, *viz.* the *Spring*, *Autumn*, and *Winter* blowing kinds, with *Pink* colour'd *Flowers*, and the *Sweet Scented White Flowering Kind.* The laſt is ſomewhat tender, and rarely found in our Gardens; but the other ſorts, which are hardy enough to ſtand abroad all the Year, are pretty common. Theſe are rather *Turnep-rooted Plants* than *Bulbs*, and are only propagated from *Seeds* ſown as ſoon as they are ripe, which indeed are more like *Roots* than *Seeds.* Theſe *Plants* are beautiful as well in the Variegations of their *Leaves* as the delightful Colour of their *Flowers*; they love a light Soil, and can only be tranſplanted with ſafety about *Midſummer*, when their *Leaves* are decay'd; their Bloſſoms ſeldom riſe above four Inches from the Ground.

SECT. VII.

Of the GUERNSEY-LILLY.

THE *Guernſey-Lilly* has hardly its equal for Beauty among the Flowering Race; and yet it is rarely found in our Gardens; which may be perhaps for want of a right knowledge of its Culture. Mr. *Fairchild* of *Hoxton* has this *Plant* Flowering with him every *Autumn*, even from *Off-ſets* taken from the great *Roots*: The *Bloſſoms* are large, and not unlike thoſe of the *Lilly* in their Make; ſeemingly powder'd with Gold Duſt upon their *Roſe*-colour'd *Petals*. The moſt proper Soil for this *Plant* is two third parts of Sea Sand to one of Natural Soil, or a light Sandy Earth mix'd with an equal Quantity of Rubbiſh. It will bear the Hardſhips of our Winters, if it be planted in either of the foregoing Soils under a warm Wall; but chiefly, if it be kept dry. The *Flower-ſtems* of this *Plant* are commonly about a Foot high.

SECT. VIII.

Of the Gladiolus, Fritillaries, *and* Iris.

THE *Gladious* or *Corn-flag* Bloſſoms in *May* upon *Stalks* of almoſt two Foot high; the Flowers are of a Roſe

Colour, and laſt about ſix Weeks. The *Fritillaries* are of ſeveral kinds, Bloſſoming in *April*; their Flowers are chequer'd with two or three Colours, ſometimes *White* and *Red*, others are *Green*, and *Brown* or *Yellow* and *Black*; they are Curious *Plants*, and are very proper (like other *Bulbs*) for *Parterres*. The *Iris* is likewiſe a numerous Tribe, ſome ſorts of them bloſſoming in *April*, others in *May* and *June*; their *Flowers* are of ſeveral Colours, and their Figures different; they are all of them pretty Ornaments for Gardens, and may be increas'd by *Off-ſets* taken from their Roots when their *Stalks* are decay'd. Theſe, like other *Bulbs*, love a light Soil.

S E C T. IX.

Of the COLCHICUM, and CROCUS.

THE *Colchicum* has a Root ſomewhat like the *Bulb* of a *Tulip*, but its Flower reſembles that of a *Crocus*; there are many kinds of *Colchicums*; thoſe with *ſingle White*, and *Pink*-colour'd *Flowers*, ſome with *double Pink*-colour'd *Bloſſoms*, and another kind with *Flowers* chequer'd with *Pink* Colour and *White*: All theſe Bloſſom in *Auguſt* and *September*, about four Inches above Ground; they delight in Sandy Soil, and will only bear tranſplanting about *Midſummer*, when the *Roots* are entirely at reſt. The *Saffron Crocus* blows at the ſame time with the *Colchicums*, bearing *Purple Flowers*, of the ſame heighth and bigneſs; this *Plant* is of great Uſe (as well as Beauty) for the ſake of its *Piſtillum*, which is the *Saffron* uſed in *Midicine*. I have often wonder'd that this *Plant* is not more commonly Cultivated in our Gardens, ſeeing how valuable a Commodity it produces; beſides the Pleaſure of its Bloſſoms at a Seaſon when very few Flowers appear. This is one of the laſt kind Offices of the departing Summer, and ſhould be taken notice of. The *Leaves* appear ſo ſoon as the Flower is paſt, and remain all Winter, which in the Spring ſhould be tied together in *Knots* to help the Increaſe of the Roots, which will be fit to remove or tranſplant about *Midſummer*. This *Plant* chiefly delights in chalky Ground, but will proſper alſo in a Sandy Soil. The way of preparing the *Saffron* for uſe ſhould have been inſerted in this Place, but at preſent I have only an imperfect Account of it; and therefore ſhall defer it till ſome curious Perſon in that Art has been pleas'd to communicate to me a more exact Receipt for its Management than then what I have now by me, which I ſhall gratefully acknowledge. The ſeveral kinds of *Crocus* which bloſſom in the Spring are the common *Yellow* and *Black ſtrip'd*, the *Yellow Dutch*, the early and later *Purples*, and the *White* ſort; all theſe bloſſom about *February* and *March*, and make the beſt Flowering Edgings of the Spring; the *Roots* may be taken out of the Ground in *June* and re-planted with other *Bulbs*. They are increas'd by *Off-ſets*, and love a light Soil.

SECT. X.

Of the Snow-drop, Winter-Aconite, Dens-caninus *and* Orchis, *or* Satyrion.

THE *Snow-drop*, altho' it is a common Flower, ſhould not be wanting in *Parterres*; it is ſo fit a Companion for the *Crocus*, as well in reſpect to its Heighth as Time of Flowering, that it has been cuſtomary to Plant them together; their Culture likewiſe is the ſame, ſo that one Trouble of the Gardener will ſerve for the Propagation of both; as likewiſe of the *Winter Aconite*, which is alſo one of the firſt Leaders of the Spring, beginning to diſplay its pretty *Yellow Bloſſoms* about the firſt Week in *January*: The *Roots* of this ſort of *Aconite* are not ſo regular in their Shape as the *Bulbs* of the *Crocus*, nor ſo miſ-ſhapen as the *Roots* of *Anemonies*; they are ſo ſmall 'tis hard to find them when the Leaf is decay'd. This kind of *Aconite* will ſoon over-run the Ground where it is planted, as well by ſhedding its Seeds as from *Off-ſets*, which its *Roots* freely put forth; the Flowers of it are never more than three or four Inches above Ground. The *Dens-caninus*, or *Dogs-tooth'd Violet*, is another *Dwarf* like the former, it produces its Bloſſoms in *March*, of a *White Colour*, ſomewhat tinged with *Purple* like the Bloſſoms of the *Spaniſh Jeſſamine*; this *Plant* muſt be propagated like the others I have mention'd in this Section, and like them loves a Sandy Soil. The *Orchis* has many Varieties, which may be found in every Herbal; I ſhall mention only three or four ſorts which are commonly Cultivated by the Curious, ſuch is the *Bee-flower*, the *Fly-flower*, the *Lizard-flower*, and a more common ſort found in Meadows with *Purple Flowers*; theſe ſhould all be removed with Balls of Earth about their *Roots* juſt when their *Flower-ſtems* begin to appear above Ground; they Bloſſom about half a Foot high in *May*.

I ſhall now conclude this Chapter of *Bulbous-rooted Plants*, with acquainting my

Reader; as a certain Rule which he ought to obſerve, that *Bulbs* are taken out of the Ground every Year, only for the Preſervation of the Variegations of their Bloſſoms; but ſuch as are not admir'd on account of their Stripes ſhould be left ſtanding in the Earth at leaſt three Years, for the Benefit of their Increaſe; and alſo that the moſt ſafe time of removing *Bulbous Roots* is when the *Leaves* are decay'd.

CHAP. VII.

Of ANNUAL-FLOWERS *and* PLANTS, *their Culture and Management in Gardens.*

THE *Plants* which I ſhall treat of in this Chapter are of that Nature, that the Method of Culture proper for one or two of them will be ſufficient to inform my Reader of the right way of managing all thoſe which may be comprehended under the Denomination of *Annuals*: In ſhort, the Curious Planter has no more to do, than provide a Hot-bed about *February* or *March*, for the Seeds of the moſt tender kinds of *Annuals*, and to prepare the Soil of his Natural Garden Beds for the Interring the Seeds of the moſt hardy ſorts about the middle of *March*, and that he may with more Eaſe be inform'd of the ſeveral Kinds which are now commonly uſed for the Beautifying of Gardens, I ſhall give him an Account in two ſeparate Sections or Tables of their *Names*, *Stature*, *particular Beauties*, and *times of Flowering.*

SECT. I.

Of ANNUALS *to be rais'd in a Hot-Bed.*

THE *African Marygold* has a large *double Yellow Flower*, blowing above two Foot high, in *May*, *June*, *July*, *Auguſt* and *September.*

II. The *French Marygold* has a ſmaller Flower than the former, *Yellow* intermix'd with *Red*, near two Foot high, Bloſſoming from *May* to *September.*

III. *Sweet Sultan*, three ſorts, with *White*, *Yellow* and *Purple Flowers*, they ſmell like Muſk, and bloſſom two Foot high, from *June* to *September.*

IV. *Capſicum Indicum* or *Guiny Pepper*, with long and round Scarlet Fruit, for which it is only admired, begins to make a handſom Show in Gardens about *July*, and laſts till *September*; this *Plant* is about a Foot a Foot and half high. The common People in *Italy* pulveriſe the *Yellow Seeds* contain'd within the *Podds* of this *Plant*, and uſe it inſtead of *Pepper*, and the late Biſhop of *London* frequently eat of it in the ſame way.

V. *Marvel of Peru*, two ſorts, one with *Red* and *Yellow Flowers*, the other *Purple* and *White*, theſe blow from *July* to *September* two Foot high.

VI. *Amaranthus*, two ſorts, the *Tricolor* and *Cockſcomb*; the firſt is only beautiful in its *Leaves* which are variegated with *Scarlet*, *Yellow* and *Green*; the ſecond is admir'd for its *Scarlet Flowers* like *Cocks-combs*. Theſe are Ornamental *Plants* from *July* to *September*, growing about two Foot high.

VII. *Convolvulus*, three kinds, the *Major* with a *Purple Flower*, the *Minor* a *Blue Flower* variegated with *Yellow* and *White* and the *Scarlet* Flowering kind; theſe blow from *June* till *Auguſt*, and creep upon the Ground.

VIII. *Female Balſam's*, three ſorts, the *Roſe* Colour, the *Purple*, and the *White* kinds; theſe bloſſom about a Foot and half high, from *June* till *September*.

IX. *Belvidere* or *Pyramid-buſh*, a pretty *Green* without Flowers, about two Foot high.

X. *Buſh*, *Baſil*, a ſmall *Shrub*, about a Foot high, with *ſweet-ſcented Leaves*.

XI. *Naſturtium Indicum*, or *Indian Creſſes*, two ſorts, one large, the other ſmall, has Flowers variegated with *Yellow* and *Scarlet*, they run upon the Ground, and blow from *May* till *September*.

XII. The *ſenſitive Plants*, two ſorts; one of which is call'd the *Humble Plant*; becauſe the *Leaves* of it fall down to the Ground upon the Approach of a Man's Hand, and the *ſenſitive Plant* curls up its *Leaves* by touching it, theſe two muſt be conſtantly kept under Glaſſes all the Summer.

I muſt beg the Reader's Pardon if I introduce the *Tuberoſe* among the *Annuals* of the Hot-bed, which every one knows to be a *Per-annual Plant* in *Italy*, but as it is *Annual* with us, I hope to be excus'd; the *Roots* of it muſt be planted in the Hot-Bed with the other *Plants* of this Section, and muſt be kept from Water till the *Leaves* begin to put forth. In *July* and *Auguſt*, their *Flowers* appear upon *Stems* of three Foot high, which afford a moſt agreeable Scent.

For the more particular Management of the *Plants* I have here mention'd, my Reader muſt take notice, that when the Seeds are come up, the young *Plants*

XI. *Wing'd Peas*, ſown in Drills for Edgings, have pretty *Crimſon* Bloſſoms blowing about ſix Inches high in *May* and *June*.

XII. *Annual Stocks* for Edgings, or ſown in Spots, bloſſom in *May* and *June*, bearing their Flowers of a *Pink* Colour, about ſix Inches high.

XIII. *Venus Looking-Glaſs* is proper for Edgings, or to be ſown in Spots; it bloſſoms the ſame Height and at the ſame time with the former, bearing Flowers of a *Violet* Colour.

XIV. *Venus Navelwort* has *white* Flowers, is a pretty *Dwarf Plant* fit for Edgings or Spots, and bloſſoms alſo with the foregoing *Plant*.

XV. *Candy Tufts* are of two ſorts, one with *White*, the other with *Red* Flowers; they are both proper for Spots, or Edgings, and flower with the former.

XVI. *Hearts-eaſe*, or *Viola tricolor*, has Flowers variegated with *Purple*, *Yellow* and *Red*, it is a *Dwarf* like the laſt, and makes pretty Edgings. This alſo bloſſoms in *May* and *June*.

I have now no more to do than to remark, that all the *Annuals* I have mention'd in this Section will blow ſooner or later as their Seeds are put into the Ground, and I would adviſe the Curious to ſow ſome

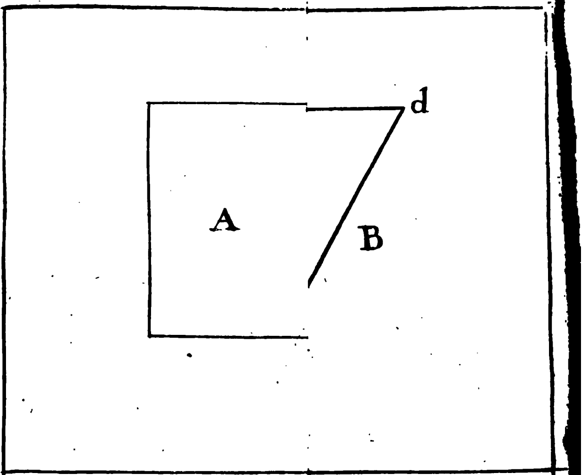
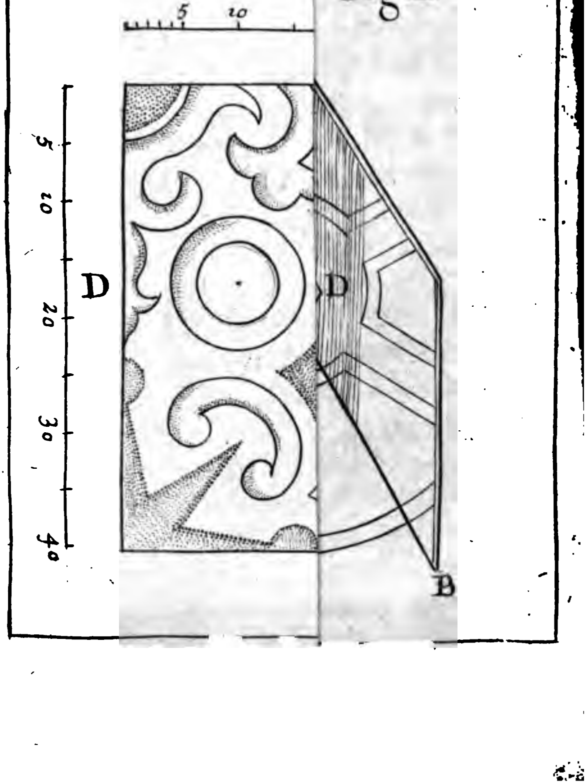


Fig III



ſome of their Seeds in every one of the Summer Months, if he would have them ſucceed one another in Flowering; but the *Dwarf* kinds eſpecially.

I ſhall here give him a Deſign of a Garden-bed divided into five Parts, * the Middle Line A is proper for the talleſt *Plants* mention'd in this Treatiſe, the Lines B B for the Middle *Plants*, and thoſe mark'd C C for the Loweſt; in all which Diviſions of the Bed, he ſhould contrive to allot one third Part for *Perannual Plants*, one Third for *Bulbous-*rooted *Plants*, and the like Proportion for *Annuals*, conſidering at the ſame time what Months in the Year each *Plant* will bloſſom in, and aſſort them in ſuch manner, that all do not flower together, or at one time, but that an agreeable Mixture of Flowers may continually be found in the Garden, ſucceeding one another ſo long as the Seaſon will permit, and this he may eaſily perform by the Aſſiſtance of theſe Papers.

Subjects of this Nature cannot be more eaſily divided than in the Method I have followed, and in the next and laſt Part I propoſe to treat of the Improvements of *Fruit-Trees*, *Kitchen-Gardens*, and *Green-houſe Plants*, all which I ſhall advance ſomething New upon, and muſt repeat the ſame Deſire I have before done to the *Curious*, to communicate the Obſervations that fall in their way upon the particular Parts of *Planting* and *Gardening*.

---

* Fig. II. of the third Plate.

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To the Right Honourable

JAMES,

Earl of *Caernarvon*,

Viſcount *WILTON*,

AND

Baron of *Chandois*, &c.

My LORD,

THE beſt Reaſon I can give that theſe Papers claim Your Lordſhip's Protection is, That they endeavour to advance, in a ſmall Inſtance, the Good of our Country, and the

Benefit of Mankind. YOU are ſo kind an Encourager of every thing which looks that Way, that I promiſe my ſelf even this mean Attempt will not fail of ſome Countenance from Your Lordſhip, which is the ſureſt Means of its being acceptable to the reſt of the World. They who ſhall happen to profit by this Work, will owe the greateſt Debt to your Lordſhip, ſince your Name will be the beſt Recommendation of its Worth. But that my Imperfections may not entirely take Shelter under ſo great an Authority, I do aſſure Your Lordſhip, that I have omitted no Pains to make it as compleat as I could; and what it ſtill wants of being ſo, may well be imputed to my Diſtance from Your Lordſhip's improving Thoughts, by the ſhort Experience I have had of them in Relation to this Subject; I am ſure that my Obſervations have loſt much for want of ſo juſt Corrections.

My LORD,

IT would be as improper in me, as diſagreeable to You, to talk of the great Merit and Eſteem

You ſtand in with all Mankind. The Publick feels the Benefit of all Your Actions, and will do You Juſtice without my reminding them. My Hopes of not offending Your Lordſhip ariſe wholly from the Uſefulneſs of the Subject of this Work; and I humbly beg it may be accepted as an Inſtance, that I can diſtinguiſh a little, as well as the reſt of the World, in my profeſſing my ſelf,

My LORD,

Your Lordſhip's moſt Dutiful
And Obedient Humble Servant,

R. BRADLEY.

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IMPROVEMENTS OF *Planting* and *Gardening*; BOTH PHILOSOPHICAL *and* PRACTICAL.

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CHAP. I.

Of the VINE, FIG, L'AZZEROLE, *and* MULBERRY.

THE Fruit I ſhall firſt treat of is known all over the civiliz'd Part of the World; and its Qualities more generally admir'd than any other Fruit growing upon the Face of the Earth: And yet notwithſtanding the vaſt Tracts of Ground in *Europe* and elſewhere, which are found planted at this day with *Vines*, there is hardly any Plant ſo unſkilfully order'd in our *Engliſh* Gardens, or ſo little underſtood by our Gardeners.

SECT. I.

Of the VINE.

THE End of planting *Vines* is certainly to have good Store of *Grapes*; but the way to attain a large Quantity of good *Grapes*, does not only depend upon the Choiceneſs of the Sorts we plant, the Nature of the Soil they require, and the proper Scituation for them; but above all, the Times and Methods of pruning are abſolutely neceſſary to be underſtood.

The Kinds which I find to ripen beſt in *England* are, the *July Grapes*, the *Black Currant Grape*, the *Early ſweet Water Grape*, lately brought from the *Canaries*, the *Arbois* or *French ſweet Water Grape*, which are all ripe with us by the middle of *Auguſt*, if rightly managed, and the Seaſon be kind; and after them the *Muſcadines*, *Parſly Grapes*, *Fronteniacs*, *Claret* and *Burgundy Grapes*: I have ſeen all theſe in great Perfection with us, but I know not of any other Kinds early enough to ripen well in our Climate.

'Tis then of theſe Kinds I would chiefly adviſe to be propagated, which may be done either by laying down the young Branches as ſoon as the Fruit is gathered, or by making Plantations of Cuttings at that time, always minding to let a Bud or two of the Layer or Cutting be under Ground; for it is from thoſe Buds only the Roots put forth. I have alſo frequently made Layers in *March* and *April*, which have been fit to tranſplant the *Michaelmas* following; and I have known it practis'd to draw a young Branch thro' the Hole at the Bottom of a Garden-Pot about *Chriſtmas*, and then filling the Pot with Earth, it has took root and been cut from the Mother-Plant the *Michaelmas* following, with ripe Fruit growing upon it. The *Vines* thus raiſed in Pots, will hold their Fruit good almoſt till *Chriſtmas*, if they are ſhelter'd from the Weather in a Green-houſe or ſome ſuch like Place; and it is eaſy to conceive how pleaſant it will be to have them brought thus growing to the Table in a Deſert.

By what I have obſerv'd in planting of *Vines*, the Month of *February* is the beſt, if the Weather be open; and great Care muſt be taken in the Removal of this Plant, that the Roots be not too dry before it be replanted, for that would greatly endanger it: Therefore wet Moſs wrapp'd about the Roots, if they are to be ſent to any remote Place, has been practis'd with good Succeſs.

Concerning the *Soil* proper for *Vines*, I ſhall give the firſt Hint from that ingetious and candid Piece of Mr. *Laurence*'s, where with ſo much good Reaſon he tells us, that he cannot eaſily be brought to think any Soil or Scituation can be too dry for the Roots of the *Vine*, after having ſeen at *Barnwall* near *Oundle* in *Northamptonſhire* a flouriſhing *Vine* grow from between the Joints of an old Caſtle-Wall near 20 foot high from the Ground, which he was told produced admirable *Grapes* when it was well managed. This Obſervation of that curious Gentleman might be ſufficient of its ſelf to inform us of the Property of the Soil requir'd for *Vines*, without ſeeking after other Experiments to ſatisfie us in it.

In the Gardens of my worthy Friend Mr. *Balle* at *Cambden-Houſe*, there are now growing ſeveral *Vines* in the Walls, ſome of which were planted there by that Gentleman's Direction; and one in particular, which is a *Muſcadine*, produces every Year fairer Bunches of Grapes, much ſweeter, and earlier ripe (at leaſt a Fortnight) than any other *Vines* in his Garden, altho' he has the beſt Collection of forward Grapes I have yet met with in *England*.

But yet farther, if we take a View of the *Vineyards* abroad, which afford the richeſt and beſt Wines, we find the Soil either rocky or gravelly. The *Chianti*

Wine of *Italy*, for Example, grows upon a high Ground in a rocky Soil like to that which they make Lime of; and the ſtrong *Spaniſh* Wines are the Growth of the Mountains, which will hardly produce any other Kind of Plant, they are ſo extreamly dry: In a word, all the Places which I have ſeen or heard of, which produces good Grapes, have a dry, hot Soil, and are ſomewhat Mountainous.

From ſuch Obſervations, and ſome Experience I have had in the Culture of the *Vine*, I find chalky Hills, ſuch as are frequent enough in *Oxfordſhire*, are very proper to plant *Vines* upon, if they lye well expos'd to the Sun; So, hot gravelly Ground which lies dry and warm, will produce better Grapes than any of the rich Soils prepar'd with Horſe-dung; but in a Garden where either of theſe Soils are wanting, the Rubbiſh of ſome old Building will very well ſupply the Defect, if it be well ſifted and mix'd (about one third part) with the Earth about the Roots of the *Vines*.

I think I need not ſay how much the ripening of ſome Sorts of Grapes depends upon a good Wall, and warm Expoſure, and that even with thoſe Helps, we ſometimes fail of ripe Grapes. It may not be amiſs then, to conſider of ſome Ways that may expedite the budding out of the *Vines*, and conſequently by making them bloſſom earlier than uſual, may haſten the growth and ripening of the Fruit while we enjoy the Summer Sun.

As the proper Soil and right Expoſure for *Vines* contributes to the early ripening of Grapes, ſo the right Seaſon for general Pruning likewiſe is helpful to the ſpeedy perfecting of the Fruit, as I ſhall ſhew afterwards; but ſhall firſt take notice of an Obſervation or two of *Vines*, that were made to ſhoot near two Months ſooner than Nature would of her ſelf have given them Motion. In *Kenſington* I have obſerv'd a *Vine*, that happen'd to be planted againſt a Baker's Oven, to ſprout in the beginning of *March*, and continue from that time to ſhoot vigorouſly all Summer; and although it had very little Advantage of the Sun's Heat, and grew in a ſtiff wet Ground, the Grapes ripen'd much ſooner than any others of the ſame Kind: But at the *Pot-Houſe* at *Fulham*, where the Soil is ſandy, and the Expoſure warm, there was a *Vine* planted againſt an Oven which was conſtantly kept hot for baking of Earthen Pots, that began to Bud about *January*, and would, as I am inform'd, have ripe Grapes in *June* by the help of a Glaſs Frame which was uſed to cover it in ſevere Weather; and ſo to plant a *Vine* againſt the back of a Chimney where a Wood or Turf Fire is conſtantly kept, ſo as to warm the Bricks, it will by that means ſprout early, and have its Fruit ſooner perfected than other *Vines* which have not that Help, as I have experienced.

Suppoſing then, that a *Vine* by this Means is brought to Shoot or Bloſſom earlier than uſual, let us not deceive our ſelves with the too common Opinion, that the expoſing the Bloſſom or young Fruit immediately to the Sun; will be a means of haſtening its Maturity, or making it large, and as ſome do, to pull away the Leaves from about it; for that rather retards the ripening, than forwards it, by contracting ſo much the outſide Skin of the Fruit, that it cannot receive the Nouriſhment it ought, and would otherwiſe admit of; and I am ſure whoever knows any thing of the Growth of *Vegetables*, will allow, that Shade always contributes to the large Growth of Plants and Fruits, and that the Heat of the Sun is chiefly requiſite for the ripening of Fruits; therefore let the young growing Fruit always remain ſhelter'd with its Leaves till it be full grown, and then begin to lay it open to the Sun for ripening.

I ſhall next conſider the *Pruning* of *Vines*, eſpecially of thoſe growing againſt Walls; for it is a right knowledge of the Seaſons and Manner of Pruning, which chiefly contributes to give us a plentiful Store of good ripe Fruit.

It is commonly practiſed by the Gardeners, to prune their *Vines* in *December*, which

Seaſon they hold to be much better than the Months of *January* and *February*; for the *Vines* prun'd in thoſe Months, are apt to bleed away too much of their Strength; and it is as common among them to leave four Buds or Eyes upon every prun'd Branch, whether they are ſtrong or weak Shoots: I have, I muſt confeſs, ſeen *Vines* that have been ſo order'd, produce good Fruit; but I am aſſur'd, whoever was to ſee the Vines which are now in Mr. *Fairchild*'s Garden at *Hoxton*, would go another way to Work. It is his Method to prune his *Vines* ſo ſoon as the Fruit is gather'd, and according to the Strength or Thickneſs of the Branch he leaves growing, he allows a due Length, a very ſtrong one, about a Yard long, and thoſe of leſs Vigour are prun'd ſhorter in Proportion: By this Method of Pruning, I obſerve he never fails of large Quantities of Grapes, ripening very well, and much earlier than any of the ſame kind prun'd after the uſual manner.

The *May* after this Pruning, our *Vines* muſt be again look'd over, and then disburden'd of the ſmall weak Shoots, rather by breaking them off, than cutting; and ſuch Shoots as have then Fruit appearing upon them, muſt be top'd ſo as to leave a ſufficient number of Buds above the Fruit upon each Branch, in proportion to its Strength or Thickneſs, obſerving always not to prune nearer to the Fruit than three or four Buds.

In *June* the *Vines* muſt be examin'd for the third Time; and the barren Branches, which will then be ſhot to a great Length, ſhould be prun'd to ſuch Lengths as anſwer to their Vigour, or elſe taken quite away, if they are not wanted, to furniſh ſome Vacancy on the Wall.

About the Beginning of *Auguſt* the Grapes of the forward Kinds will be full grown, and then we may again give a fourth Pruning, in order to expoſe the Fruit to the Sun for ripening; but yet let it not be left too naked of Leaves, leſt it be injur'd from the cold Dews which begin to fall the latter End of the Month.

In the Summer Prunings of *Vines*, due regard ought to be had to the Number of Branches, which the Wall will require to be laid in the Winter to ſupply the place of old Wood, which ſhould then be taken away; for it is a certain Rule, that no Branches of the *Vine* bear Fruit but ſuch as are the Produce of the laſt Year; and thoſe, if they are diſcreetly managed, ſeldom or never fail to furniſh Fruit in abundance.

Thus I have ſet down what I know concerning the Management of *Vines* againſt Walls, and ſhall now proceed to offer ſome few Hints concerning the Way of ordering them in *Vineyards* for the making of Wine, which I am ſatisfied may turn to as good Account in *England*, as they are known to do in many Parts of *Germany*.

If a *Vine* will proſper upon a Chalk, as we are certain it will, how trifling would be the Expence to plant an Acre of ſuch Ground with *Vines* in ſome well-expos'd Place on the Declivity of a Hill: The yearly Income of ſuch Land can hardly be a Shilling, if it be ſtrictly Chalk; and the *Vines* may be rais'd, as I have directed, with very little Trouble; and then for the Charge of Planting, a Week's Work for a Man would more than do it, ſeeing there is no Neceſſity of Manuring the Ground: The whole Expence before they began to bear Fruit, which would be the third or fourth Year after Planting, could hardly amount to twenty Shillings; ſo that I ſee no room for any Objection upon that account: The chief thing will be to ſhew, upon reaſonable Grounds, that Plantations of this kind will produce ripe Fruit, and that, I think, may be made appear very plainly.

In the firſt Place plant only the forward Kinds of Grapes, which have often enough been experienced to ripen in open Borders, without the Help of a Wall; witneſs the Vines at a *French* Gardener's at the Back of *Swallow-Street*, *London*; thoſe at the Honourable —— *Johnſon*'s, Eſq; at *Twittenham*; the *Vineyard* near *Bath*; that near *Greenwich*, and almoſt in every Nurſery.

2dly, The Chalk-hill, which I propoſe to be planted with *Vines*, will certainly reflect as much Heat upon the Fruit as any Wall whatever; and every one knows that the Cold in thoſe Parts of *Germany* where the *Rheniſh* Wines are made, is much more powerful than what we feel in *England*; ſo that ſince we need not be apprehenſive of too much Cold in the Winter, and may reaſonably expect as much, if not more, Warmth in the Summer, our *Vineyards* may certainly afford us as good Wine as what we receive from the *Rhine*, and ſome places in *France*, and conſequently turn the Owner to Account.

But that we may anſwer every Objection that may be made againſt planting of *Vineyards* in *England*, give me leave to recite what I have heard relating to the making of Liquors with unripe and ſour Fruits. In *Devonſhire* a Gentleman made a Veſſel of *Verjuice* of *Crab*, or *Wilding-Apples*, which being placed in his Cellar among other Liquors, was not uſed 'till about three or four Years afterwards, and was then found to be ſo palatable and exceeding pleaſant, that he now prefers the Liquor made of ſuch wilding ſour Fruit (after it has had time to digeſt) rather than any *Cyder* of that Country: So I have known *Verjuice* made of half-ripe Grapes, that after two or three Years keeping in a Veſſel has become delicate Wine; and the *Rheniſh* Wines, when they are newly made, are ſo ſour, that they are not fit to drink, but after ſeveral Years ſtanding afford us that incomparable Liquor, which is call'd *Old Hoc*; and on the contrary ſweeter Liquors are apt to turn ſour by keeping, which is one Argument to prove that a continual Motion and Alteration of State of every created Atom, is requiſite to ſupport the Frame of Nature; and, as I conceive, was it poſſible that any one the leaſt Particle of Matter could be deſtroy'd or lie ſtill, all Life and Being muſt ceaſe; ſuch Dependency has the greateſt Bodies upon the ſmalleſt Beings, or the moſt inveterate Oppoſites upon one another. The skilful Chymiſt knows how to ſeparate the differing Parts ſubſiſting in Liquors from one another; the volatile Spirits from the more watery Parts, and thoſe from the more oily; ſo that we find every Liquor contains a Chain of certain Qualities; and Liquors are only differing, in that one has perhaps the Acid more prevailing, the other the Alkali, or either of thoſe Powers more or leſs predominant at certain Seaſons. The Sweet, when it prevails in any Liquor, is not without the Sour ſubſiſting in it, altho' it has not Power to appear 'till its oppoſite begins to decline, and ſo the Sour is not without the Rudiment of Sweet, altho' it cannot be diſcern'd 'till the Time of Ripeneſs approacheth. But I ſhall forbear advancing any farther at this time in ſo vaſt a Field, and proceed to the Buſineſs in hand; That our Chalk Hills, and thoſe that are accounted the moſt barren Mountains in *England* are very proper to plant *Vines* upon, and the higher the better; for 'tis obſervable that ſeveral *Vineyards* in one Country, planted with the ſame ſort of *Vines*, produce very different Wines; thoſe on the Tops of Hills much ſtronger and better than thoſe which lie lower; inſomuch that one Barrel of the Mountain Wine will ſell for much more than that growing in the Valleys; and ſo far as I can learn, the ſtrongeſt Wines are always the Produce of the higheſt Mountains.

To plant a *Vineyard*, let the Place where each *Vine* is to ſtand, be open'd and prepar'd before any of the Plants are taken out of the Nurſery; let them ſtand a Yard aſunder in Lines, and the moſt proper Seaſon for their planting is in the firſt open Weather in *February*. It is uſual to prune theſe *Vines* according to their Strength the *September* before tranſplanting, leaving not more than four Buds on the ſtrongeſt, and then they will require no other Care the firſt Summer but to keep them clear from Weeds; about the End of *September* after planting, ſhorten the Shoots of that Summer according to their Strength, and the Summer following the ſtrongeſt of them will begin to ſhew a little Fruit; this ſecond Year the breaking of the ſmall Shoots and ſuperfluous Branches ſhould be carefully done in *May* and *June*, and two or three Shoots only maintain'd on each Vine, according to its Strength, and thoſe not to be ſhorten'd till the *September* following; theſe ſhould be ſupported by Stakes or Poles, ſo that they may not run cloſe to the Ground, but about a foot above it, leſt too much Wet ſpoil and rot the Fruit; for the nearer the Ground the Grapes grow, if they do not touch it, the riper and ſweeter they will be, and the ſtronger the Wine. In a word, continue from time to time this Method, to preſerve young ſtrong Shoots every Year to bear the following Summer, in Proportion to the Strength of every Vine, cutting away all the old ones, which (were they to remain) would only rob the Plants of their Strength.

But if notwithſtanding all the Care of pruning and weeding the *Vineyard*, the *Vines* are not inclin'd to produce large Bunches of Fruit, lay Ox's Blood or Carrion to their Roots about *November*, or, as it is very common in all the *Vineyards* abroad, manure them with humane Dung that has lain ſome time to meliorate and has loſt its Odour. This way of enriching Ground has very evidently the beſt Effect upon Fruit-Trees of any other Manure whatever, but *Vines* chiefly, which will not bear any other.

With this Management, I doubt not that our *Vineyard* will produce good Store of Grapes in 5 or 6 Years after planting; and if the Owner ſhould be then diſpoſed to try what Wine they will produce, let him gather the Fruit when they are full ripe in dry Weather, if poſſible; then put them in the Fatt, and have them trodden by Men to preſs out the Juice without breaking the Stones; or where the Quantity of Grapes is not large, to preſs them with the Hands will do as well, and ſeems more cleanly: The Liquor thus preſs'd, ſhould ſtand in the Fatt about 15 Days with the Husks and Stalks in it to ferment if the Grapes were dry when they were gathered; otherwiſe not much above half that time before the Wine be drawn off, leſt it turn ſour, as it will be apt to do if the Grapes were gather'd wet. Some who are very curious in their Wine, pick off the damaged Grapes from the Stalks, before they make the Wine, which is ſo rich in its Flavour, that to compare it with the Wine made the common Way from the ſame *Vineyard*, it does not appear to be of the ſame Growth.

It is obſervable, that according to the Management of the *Vines*, the Wine is ſtronger or weaker: Thoſe *Vines* which have their liberty to run up high Trees, and are never pruned, afford the ſmalleſt Wines; others which are kept pruned, and have their Branches tied to Stakes about four foot high, make which in *Spain* and *Italy* are held in great Eſteem. The *White Figs* chiefly are valued by the Curious for their delicate Flavour, and early Ripening.

SECT. III.

Of the L'AZZAROLE.

THE *L'Azzarole* or *Neapolitan Medlar* is a kind of *Service*, producing very pleaſant Fruit, as I have heard from ſome curious Gentlemen who have eaten of it in *Italy*, where it grows frequently: Of late Years it has been brought into *England*, and cultivated in ſeveral Gardens, where I am inform'd it has produced Fruit; it boldly reſiſts the Severity of our Winters, and is well inclin'd to grow with us either in Standards or againſt Walls. I have propagated it three ſeveral Ways, by Budding it upon the *Hawthorn* in *July*, by Grafting in the Cleft in *March*, and by Inarching in *May*; ſo that the Admirers of this Fruit may be eaſily ſtock'd with it, if they are provided with a Nurſery of *Quickſet*. It loves a holding fat Soil.

much better, in my Opinion, than any I have yet ſeen againſt Walls; for as they are endanger'd by pruning, ſo they like as little the Confinement they are obliged to againſt Walls.

I have been told of a *Fig-tree* near *Windſor*, (that grows wild without Culture in an old Gravel-pit) which is ſo extreamly large, that many Buſhels of *Figs* are gathered yearly from it; and I know of ſome old *Fig-trees* that have been neglected for many Years, which bear more Fruit than any that I have ever ſeen dreſs'd and order'd in Gardens; and it is the common Practice abroad to plant them in certain Places of their *Vineyards*, and let them grow after their own Manner without any Interruption, ſo that with very little Difficulty this Tree may be cultivated. The only Art requir'd in its Management, is to preſerve the ſecond *Figs* during the Winter, that the ſevere Weather do not make them fall from the Tree, but that they may be maintain'd in Health to ripen early in the Summer. I remember to have ſeen at the late Biſhop of *London*'s Gardens at *Fulham*, ripe *Figs* in *May*, which were brought to that forward Perfection by keeping them in Pots, and ſheltring them all the Winter in a *Green-Houſe*.

Tho' with us we have not many Varieties of this kind of Fruit, yet are there as many Sorts of *Figs* as of any other Fruit, and will make a handſome Tree very quickly. I am well aſſur'd this would do much better than raiſing them by Layers, which is the common way, or from Seed, as ſome have practis'd.

The *White Mulberry* may be increas'd either by Seeds ſown in *March*, or laying the youngeſt Shoots into the Earth at that time. The Seeds will ſprout about three Weeks after ſowing, and be near ſix Inches high the firſt Summer, and the Layers will be fit to take off the Spring after they are laid into the Earth.

By either of theſe ways we may ſoon raiſe ſtore enough of young Plants to ſupply a large quantity of *Silk-Worms*; for which end the *Chineſes* ſow large Fields of this Sort of *Mulberry* to mow them down from time to time as they have occaſion; and the People of *Italy* plant Trees in the Roads, and every vacant corner of their Ground. I have heard of a Man near *Utrecht*, who has lately began the Trade of Silk, and the laſt Year, as I am inform'd from good Hands, made ten or twelve Bales of *Silk* from his own *Worms*: And, ſo far as I can underſtand, were Silk-worms more regarded in our Climate, they would do as well with us as they do in *Italy*, where they are ſubject to ſo many Hazards, but chiefly to be ſpoil'd by the violent Thunders frequent in thoſe Parts: No Man there is certain of a good Silk-Harveſt, till the Worms have actually ſpun their Silk; for if Thunders happen to come juſt when the Worms are going to ſpin, they will immediately drop, and infallibly periſh. It would be well to try whether the firing of Guns near ſuch Trees as are infeſted with Caterpillers, will not deſtroy thoſe Inſects.

CHAP. II.

Of Kernel-Fruit, ſuch as the APPLE, PEAR, MEDLAR, QUINCE.

SECT. I.

Of the APPLE-TREE.

THERE is no kind of Fruit better known in *England* than the *Apple*, or more generally cultivated. It is of that Uſe, that I hold it almoſt impoſſible for the *Engliſh* to live without it, whether it be employ'd for that excellent Drink we call *Cyder*, or for the many Dainties which are made of it in the Kitchen: In ſhort, were all other Fruits wanting to us, *Apples* would make us amends.

It may therefore be expected that I ſhould be the more particular concerning the Culture of this Tree, but conſidering how many have written of its Management, and how generally it is propagated with good Succeſs, I ſhall not enlarge upon it ſo much as otherwiſe I ſhould have done.

To ſet down the ſeveral various Names of *Apples*, would be a Work almoſt impoſſible, ſeeing how many various kinds are yearly produced from the Kernels in almoſt every County in *England*; and where they happen to prove good, either for making *Cyder* or Table-uſe, have Names given them according to the mind of the Perſon that rais'd them: However, as every Kind of *Apple* will not do well in *Eſpalier*, I cannot well avoid mentioning thoſe few ſorts which I have approv'd to be the moſt proper for Hedges, and the rather becauſe their Names are generally known to every Nurſery-Man about *London*. For that Uſe then, the *Codlin*, the *Non-pariel*, *Golden-Pippin*, *Kenton-Pippin*, and *Holland-Pippin*, ſeem to be the beſt; I have found theſe Kinds to bear plentifully, and produce Fruit upon their loweſt Branches; and I am perſuaded whoever delights in Gardens will not be without *Eſpaliers* of them, as well for the ſake of the great Quantity of Fruit they will produce, as for the Ornament they afford to a Garden, and the good Shelter they yield to all the under Race of Kitchen-Garden Plants which are encompaſs'd with them.

I have found this Good by encloſing the Quarters of a Kitchen-Garden with *Eſpaliers* of Fruit, that as they loſe their Leaves in the Winter, they then obſtruct none of the Sun's Rays from paſſing directly to the Herbs planted within them; and in the Summer, when they are cover'd with Leaves, they afford that Shade which is ſo requiſite for the good Growth of many Plants; and beſides theſe Conveniencies, being tied up to Poles, and kept in good Order, the very Borders they are planted in are as capable of receiving into them Herbs or Flowers, as if they were plain and open, and not any Trees planted on them.

The *Codlin*, which is the firſt of the *Apples* I have named for this Uſe, is propagated from Suckers taken from about the Roots either in *November* or *March*, and the other Sorts are increas'd by graffing upon *Crab-Stocks* in *March*: If they are deſign'd for tall Hedges, or if for Dwarfs, or for *Eſpaliers* of ſmall Heights, then upon *Paradiſe-Stocks*; the Soil which theſe and all other *Apples* ſeem to delight in, is a medium Earth between Sand and Clay, which they proſper in if it be freſh, rather than with a mixture of Dung among it.

I find, from Experience, that all *Kernel-Fruit* ſuffer greatly by Pruning, and it is by the unskilful Management of the Knife they ſo frequently are apt to canker, and ſometimes quite periſh; for my own part, that I may ſomewhat curb the uſe of the Knife, I chooſe to break off the Buds, which would produce luxuriant Branches, when they firſt appear, rather than leave them to be cut from the Trees when they are full grown, which is commonly when the Sap is at reſt. In *May* it is eaſy to diſcern what Buds are ſhooting for our Uſe, *i. e.* which will become Branches either to fill the vacancies of our Eſpaliers, or make Fruit-Branches; and it is at that time I disbud the Tree of the others which I eſteem uſeleſs, for then the Sap will heal the Wounds.

An ingenious Perſon who knows that the Shoots of *Apples*, *Pears*, and ſuch like *Kernel-Fruit*, will not bear till they are two Years old, will always contrive to lay in ſtore of Branches every Year into his Eſpaliers to ſucceed one another in Fruit-bearing; for the ſame Branches will produce Fruit but once, and when that is over (in Eſpaliers) they ſhould be taken away in proper Seaſon to make room for the others which are coming forward. Such Pruning indeed cannot be avoided on Eſpaliers, no more than taking away the Autumn Shoots; but the diſbudding them in *May* will prevent a great deal more, which otherwiſe there would be occaſion for; ſo that upon an Eſpalier well order'd, we ought to ſee Wood laid in of three Summers, the one with Fruit, others to knot for Bloſſoms, (which work Nature always contrives to do in the Bud, the Year before they bloſſom) and the third ſort new Shoots to follow in their turn; for Example, In *Auguſt* of this preſent Year, 1718, there ought to be upon our Eſpaliers about one third of the Branches with Fruit, one third of the Branches which have ſhot this Year, and the like proportion of Branches knotted to bloſſom the next Spring. About *Midſummer* is the beſt time to tie the Shoots of that Summer to the Eſpalier, and diſburden the Tree (eſpecially if it be weak) of its ſuperfluous Shoots; let the Branches be tied about four Inches apart at leaſt, for nearer than that Diſtance would be too cloſe; Hedges thus dreſs'd would not be ſubject to overbear themſelves, but give every Year a moderate proportion of Fruit large and good.

It is obſervable, that ſome of the Summer Kinds of *Apples* and *Pears* will produce Fruit upon the Branches that ſhot the Summer before, and upon ſuch Trees the Wood of two ſeveral Years may only be left; but the Winter-Fruits which ripen late, are always the Produce of older Wood.

Between Leaf and Leaf, the Gardeners commonly find their time to prune off all the Autumn Shoots, as well from their Standard-Trees, as from their Eſpaliers; and then diſburden them from ſuch Wood likewiſe as they judge unprofitable; but the Skilful have always this Rule before them, that the moſt weak Trees are firſt prun'd, and thoſe which are very luxuriant are left 'till *March*.

The Planting of *Apples* or *Pears* for Eſpaliers is beſt done at the Fall of the Leaf, leaving about ten or twelve Foot between Tree and Tree, and the Rails made of *Aſhen Poles* may be put up the following Summer.

For *Dwarf-Apples*, I believe every one will allow that thoſe grafted upon *Paradiſe-Stocks* are the beſt, I mean for their keeping in a ſmall Compaſs, and bearing abundance of Fruit with very little pruning: I have known them frequently cultivated in Pots, ſometimes ſo full of Fruit, that the *Apples* themſelves have weigh'd more than the Tree, and the Pot they grew in. At great Entertainment, how delightful would it be to ſet ſeveral ſorts of *Apples*, growing, upon the Table! It would be a kind of movable Orchard, which could ſeldom fail to bear good Fruit, as the Trees might be ſhifted from place to place, either to put them out of the way of Blaſts, or place them in the Shade for Improvement of the Growth of the Fruit, and in the Sun for the due ripening them.

Paradiſe-Stocks are raiſed with us by planting the Cuttings of them in *Autumn*; they ſtrike Root and grow freely, ſo as to be fit to graft on in two or three Years; they are brought originally from *France*, but now they are to be met with in almoſt every Nurſery about *London*; and for *Standard* and *Hedge-Apples*, *Crab-Stocks* taken out of the Woods, or *Seeding-Plants* of about three Years old, are the beſt.

There are two ways of Planting an Orchard; the one to make it entirely for Fruit, the other to plant the Trees at ſuch Diſtances as to admit of an Under-crop. I muſt confeſs, was I to make an Orchard to pleaſe my ſelf, I would firſt divide the Ground into Parcels, allowing handſome Walks between them, which ſhould ſome of them be fenced on the Sides with Eſpaliers of Fruit, others left open with Borders only on their Sides, adorn'd with Rows of *Standard-Apples*, ſuch as *Golden-Pippins*, *Golden-Renets*, *Ruſſet-Pippins*, *Kitchen-Renets*, *Pairmains*, *Green-Ruſſets*, and ſuch like ſerviceable Fruits that will remain good for ſeveral Months.

In theſe ſeveral Quarters plant your Trees at about ſixteen Foot diſtance, if you deſign a cloſe Orchard, or near thirty Foot aſunder if the Ground is deſign'd for *Beans*, *Peas*, or ſuch like Under-crops. In Planting this Ground for either Purpoſe, ſuppoſing it three Acres, let two Thirds at leaſt bear *Apples*, and the Remainder be allotted for *Pears*, *Plums*, *Cherries*, and a *Mulberry-*

Tree or two: The Ground thus planted may be fenced about with Hedges of *Philbuds* and *Berberries*, to make it ſtill the more compleat and delightful.

SECT. II.

Of the PEAR.

THE *Pear* in my Opinion is a Fruit no leſs pleaſant than the *Apple*, altho' it is not of that general Uſe, however we are beholding to it for no ſmall Entertainment in the Winter when other Fruits are ſcarce; whether we eat them raw, or baked, they have their Excellencies: The Varieties of *Pears* are almoſt without Number, if we were to joyn the ſeveral *French* Sorts to the Catalogue of thoſe rais'd in *England*; but as I ſuppoſe every one would rather propagate a few good Sorts that bear well, and follow one another in right Seaſon, than croud his Garden with uſeleſs and unprofitable Trees; I may therefore be excus'd inſerting a tedious Liſt of their Names, and give the deſir'd Satisfaction to my Reader, if I mention only thoſe Kinds that may bring him Profit and Pleaſure; and thoſe I ſhall ſet down as near as I can remember in the Order they ripen: The firſt ripe is the little *Muſcat*, and then I would recommend the *Katerine-Pear*, which is indeed a common Fruit, but is nevertheleſs

leſs of an agreeable Flavour; The *Windſor-Pear* likewiſe is in my Eſteem, tho' it is an *Engliſh* Fruit, well worth our propagating: About the ſame Time are ripe the *Quiſſe-Madam*, *Summer Bon-Chretian*, and *Summer-Bergamot*, and indifferently good, but eſpecially the latter; then the *Orange-Bergamot*, and the firſt *Bureé-du-Roy*, exceeding good; and after theſe the *Lemon-Pear*, *Bargamot*, *Grey-Bury*, *Virte-Longue*, *Green Sugar-Pear*, *Meſſire-Jean*, and *Cryſan*; then ripens the Winter *Thorn-Pears*, *Virgolue*, *Leſchaſſeries*, and I think alſo the *Sweet-William Pears*; ſome of which laſt continue part of *December*, in which Month the *St. Germain* and *Martinſec Pears* are alſo beginning to ripen, and will hold good all the *January* following, 'till the *Winter Bon-Chretians* ſupply their Place; all theſe are Eating-Pears; and for the Baking Kinds that are the beſt I know of, they are the *Wardens*, *Black-Pear* of *Worceſter*, and *Spaniſh Bon-Chretian*; theſe, if they have time enough to ſtand in the Oven, will bake extreamly tender, and very red; but particularly will be of a moſt beautiful Colour if they are baked in Tin or Pewter-Veſſels cloſe cover'd, as has been often experienced; but indeed 'tis no wonder if by this Means they are better colour'd than thoſe that are baked in Earthen-Ware, if we conſider that 'tis a Solution of Tin Oar that makes the ſo much admir'd *Beau-dye*; and I doubt not but if ſuch as dye Scarlets made uſe of Tin or Pewter-Veſſels, rather than Copper, it might ſave them ſomewhat in the Expence of *Cochineel*, or ſuch other chargeable Ingredients. *Pears* are either grafted in *March*, or inoculated towards the latter End of *June*; and two ſorts of Stocks are made uſe of for thoſe Purpoſes, Wildings or Kernel-Stocks; and oftentimes ſuch as are taken from about the Roots of old Trees, and planted in Nurſeries, are good for *Standard-Pears*, becauſe they put the Graft or Bud forward, and tend to make large Trees; but *Quince-Stocks* are much better for ſuch *Pears* as are deſign'd for Dwarfs, low Walls, or Eſpaliers, becauſe they confine the Growth of the Graft or Bud, and produce Fruit quickly, and near the Ground.

The Soil which the *Pear* chiefly delights in is a wet Earth inclining to Clay; nay, I have ſeen this kind of Tree proſper extreamly in the ſtrongeſt ſort of blue Clay, which is accounted the worſt of Soils; ſo that this Sort, no more than the Apple-Tree, delights in what we call rich Earth. If indeed one of this ſort of Trees ſeems to decay, encourage it at the Root with Carion, or the Blood of ſome Animal, for that has a wonderful Effect upon all kind of Fruit-Trees; and I believe would have the like upon every ſort of Vegetable, as we have experienced

Shavings of Horn, Scrips of Leather, Wool, or the Entrails of Fowl, or ſuch like Parts of Animals will have upon thoſe Plants, whoſe Roots they are laid to. It ſeems therefore as if the Animal and Vegetable were made for the Support and Food of each other; the Plants to nouriſh the living Animals, and the dead Animals to feed the Vegetables.

In the Pruning of *Pear-Trees* the ſame Method ought to be obſerv'd as for *Apples*; they delight not in a Knife, and eſpecially thoſe grafted upon *Quince-Stocks.* Upon the cutting off any large Branch (if it happen to be neceſſary) cover the Wound with a Mixture of Tar, Rozin and Pitch, immediately after the Amputation, which will prevent ill Diſtempers, which the Wound would otherways be apt to bring upon the Tree.

I am no Admirer of *Dwarf Pear-Trees* in a Garden, becauſe their Figure is commonly too much ſtuddy'd and confin'd to afford us a good Quantity of Fruit; for it is almoſt impoſſible to have both together in Perfection; and beſides they take up too much room. I remember a fine Seat near *London*, where about four Years ago the Gardens abounded in *Dwarf Pear-Trees*, which altho' they were prun'd with tolerable good Skill, never produced any Quantity of Fruit, 'till at length they were laid into Eſpaliers, and have born Fruit every

Summer

Eaſtern Blaſts of the Spring com
thickens the Rind, and fills the
Knots as hard as Stone.

The Eſpaliers for *Apples* and *P*
be about ſix Foot high, that the
room enough for the Fruit-bearin
to be laid into them. And we o
wiſe to obſerve, that the *Summer-*
ſuch as have their Fruits ripen
Trees, are the moſt proper for Eſ
cauſe they are moſt ſubject to bea
Root, which the *Winter Fruits*
never do; ſo that it would be to
poſe to plant the *Bon-Chretian*, and
laſting Fruits, in Hedges, or again
that are not at leaſt ten or twelve

There is a Method, which has
perienced by ſome of my Friends, to
large Trees of Orchard Fruit. O
Acquaintance had an Orchard of
Pear-Trees, that had ſtood abou
Years; the Trees were in good H

moval of his Fruit-Trees with him, for which End he open'd Trenches about the Roots in *November*, and at the ſame time made Preparation to receive them into his new Garden, by making Holes big enough to admit of the Clods of Earth he deſign'd to tranſport with each Tree. Soon after the Froſts began to be violent enough for his Purpoſe, and ſo harden'd the Earth about the Roots, that with Leavers he rais'd his Trees out of the Ground, without breaking any of the Earth from them, and convey'd 'em upon Sledges to their ſeveral Stations in his new Garden, where they remain'd in the State they were brought, without cloſing any freſh Mold to their Roots till it began to thaw, and then he finiſh'd his Work by filling up the Trenches, and treading down the new Earth very cloſe.

About a Month after they were thus fix'd, he diſcreetly pruned off about one third of their Boughs, as near as he could gueſs, to anſwer the quantity of Roots they had loſt, and the following Summer had a good parcel of Fruit upon them. No leſs uſeful than this Method, would be the Removal of young Trees at *Midſummer*, which I believe would ſucceed very well, tho' I have not try'd it; for the laſt Summer Mr. *Furber*, a very ingenious Nurſery-Man at *Kenſington*, removed at that Seaſon ſeveral ſorts of *Ever-greens*, which are now growing, and in much better

Health than ſome others that he tranſplanted in the laſt *Autumn.* As I conceive the Sap of every Tree to be at reſt about *Midſummer*, their Tranſplantation may then be perform'd with as much reaſon, as the Removal of them at the common Seaſons uſed for that Work; for they have then more time to ſtrengthen themſelves, and form their Roots before *Winter*, than thoſe planted at *Autumn*, and will undoubtedly be better prepar'd to make ſtrong Shoots than any Trees that are planted in the *Spring*; but whether thoſe Trees that ſhed their Leaves will fare as well by this Method as *Ever-greens*, may be try'd.

I ſhall now conclude this Section with acquainting my Reader, that ſuch Fruit as does not ripen upon the Trees, ſhould not be gather'd till *Michaelmas*, and then only in dry Weather, if poſſible, without bruiſing, and laid ſingly upon Shelves cover'd with dry Moſs, if it can be got, or for want of it, upon Wheat-ſtraw, giving it Air by opening the Windows of the *Fruitery* (or Room it is laid in) till the Froſts begin. Some choice *Pears*, which ripen late in the Year, may be yet preſerved by hanging them up by the Stalks to the Ceiling of the Room; and I have known ſome curious Perſons wrap them in Paper, and hang them up till they were fit to eat.

SECT. III.

Of the MEDLAR, *and* QUINCE-TREE.

THE *Medlar*, contrary to all other Fruits is not fit to eat till it is rotten or decay'd; and as it is then agreeable to ſome Palates, I ſhall therefore give the Culture of it. It delights in loomy, natural Soil, and requires little Sun. It is propagated by graffing it upon the *Hawthorn* in *March*, and is only fit for Standards, in the moſt remote Parts of the Garden.

The *Quince* is raiſed either from Layers, Cuttings, or Suckers taken from the Root; it is a natural Fruit which does not require graffing, and comes early to bear: The young Twigs may be laid into the Earth in *February*, or the Cuttings planted in *November* ſtrike Root without Difficulty. This Plant loves a moiſt Soil, and Shade, and the Fruit, in my Opinion, exceeds all others for baking.

CHAP. III.

Obſervations and Experiments relating to the Propagating and Culture of Stone-Fruit-Trees.

THE Fruits which may be comprehended under the Title of *Stone-Fruits*, are, *Peaches*, *Nectarines*, *Abricots*, *Plums*, *Cherries* and *Almonds*; all which (the *Cherries* excepted) are ſo nearly ally'd as to make, as it were, one Family. What Directions I ſhall lay down for their Management will rather be in general than in particular, ſeeing how impoſſible it is to know every particular Soil, or the Diſpoſition of every different Tree, which if they were known would require as many various Ways of ordering. Monſ. *de le Quintinye* has indeed given us a very elaborate Piece relating to *Fruit-Trees*, endeavouring to aſcertain the Method of pruning them, but how ſeldom do we meet with any Trees juſt in the ſame State of thoſe he mentions? And if by chance we do happen to find ſuch, how difficult is it to comprehend rightly his Meaning? I cannot therefore avoid giving all due Commendations to the Ingenious Mr. *Laurence*, who is the firſt, I know of, that has reduced thoſe Difficulties in the ordering of Fruit-Trees to plain Reaſon, and has given us ſuch uſeful Experiments, whoſe Conſequences may beſt lead us to the right way of Practice in this Point. To proceed then upon the foot of Reaſon and Experience, as far as my Capacity will permit, I ſhall begin with ſome Obſervations upon the Nurſery, whoſe Soil ſhould be inclining to Loam, a medium Soil between Sand and Clay, and not any ways enrich'd with Dung; for if the Nurſery be richer than the Garden, the Trees never thrive when they are tranſplanted; therefore always contrive to plant them from bad into good Ground. About *September* make your Plantation of Suckers taken from the Roots of the *Muſcle-Plum*, the *White Pear-Plum*, or the *Black Damask*, which are good to inoculate *Peaches* upon, but muſt not be budded till *July* in the ſecond Year after they have been planted in the Nurſery. I have obſerv'd that *Peaches* proſper moſt that are budded upon *Almond-Trees* raiſed from the Stones. *Almonds* are to be put in the Ground as ſoon as they are ripe, and in one Year's Growth may beſt be inoculated, for they are too apt to *Gum* when they are older.

Nectarines and *Abricots* may likewiſe be budded upon any one of the *Plum-Stocks* I have mention'd taken from thence, and will proſper much better than if they were inoculated upon the beſt ſorts of *Plums.*

The Stones of *Black-Cherries* ſhould be ſet or ſown in *Autumn*, to raiſe Stocks to graff all other Cherries upon; they ſhould be planted out the ſecond Year after they are come up in Lines, about two foot apart; and the like diſtance ſhould be preſerv'd between all other Stocks that are deſign'd to graff on.

Cherries proſper beſt if they are graffed, which is contrary to *Peaches* and *Nectarines*, that will rarely be made to thrive but by Inoculation; all theſe are ſubject to *Gum*, which *Kernel-Fruit-Trees* are not, but the *Peach-Trees* and *Abricots* ſuffer the moſt by it, and often loſe whole Arms by a Canker that always attends the *Gum*, which comes commonly by unskilful pruning, but more eſpecially by cutting into the old Wood at the *Midſummer* Pruning; therefore at that Seaſon take off as few Shoots as poſſible near the old Wood, but nail up ſlightly as many as can conveniently be laid to the Wall, to be more regularly diſpoſed the *February* following, which is the beſt Seaſon for the capital Pruning of *Stone-Fruit-Trees*; then may every bearing Shoot be topp'd, or cut, to leave about ſix or eight Inches, according as they are ſtrong or weak, and all croſs-growing Branches, dead Wood, and the

Shoots of two or three Years old, muſt then be entirely cut out; for it is a certain Rule, That all *Stone-Fruit-Trees* only bear Fruit upon the Shoots of one Year old, which may be diſtinguiſh'd from barren Shoots, by being ſmaller and better ſupply'd with Buds. I would adviſe that a Mixture of *Tar*, *Pitch*, and *Bees-Wax*, be laid upon any capital Wound, or elſe that it be burnt with a hot Iron, to prevent *Gum* iſſuing from it.

I account Liſt of Cloth to be much better for the nailing of theſe Trees than Leather, which is apt to ſhrink by change of Weather, and bind too much the Shoots which are encompaſs'd by it: It is by ſuch Bindings that oftentimes good Branches are wounded, and by that Means periſh; and therefore it is good to let them have room enough allow'd for them to ſwell, without any Preſſure upon them. In *Holland*, and ſome Parts of *Flanders*, they have Frames of Wood, in the manner of *Eſpaliers*, ſet againſt their Walls, about four Inches diſtant from them, and the Reaſons the Gardeners there give for ſo doing is not (I think) unworthy our regard. In the firſt Place they ſay, that their Trees being four Inches diſtant from the Wall, the Fruit is not apt to be deſtroy'd or ſpoil'd by Virmin, nor bruis'd or grow miſhapen: They ſay farther, that the Wall reflects a Warmth to that ſide of the Fruit growing next to it, which has the ſame Effect as to the ripening of it, as if the Sun was to ſhine on both Sides of their Fruit, and ſo prevents that unequal Reliſh which is found oftentimes in one ſingle Fruit which grew cloſe to a Wall. To which they add, that in this Method the Trees need not be planted ſo cloſe to Walls, as to want a ſufficient quantity of Earth on every ſide of their Roots, which thoſe commonly planted in the ordinary way muſt do on that ſide next to the Wall; and alſo that the Twigs of the Trees being tied with *Baſt*, ſaves the Expence of *Nails* and Shreds, and will not be ſo ſubject to canker by too ſtrait binding. And if I may add one Reaſon more towards the recommending theſe Wall-Eſpaliers (if I may ſo call them) it ſhould be, that thoſe Poles, which run horizontally, may be ſo contrived as to ſerve for Shelter to the *Bloſſoms* and young *Fruit*, from thoſe *perpendicular Froſts*, which oftentimes are ſo injurious, as the Curious Mr. *Laurence* judiciouſly obſerves.

I have mention'd, among other Obſervations, in the Chapter of *Kernel-Fruits*, that the Eaſterly Winds commonly are apt, when they blow directly upon *Pear-Trees*, to ſpoil the Fruit, by filling it with ſtony Subſtances; and no leſs prejudicial are they to the Bloſſoms of every forward blowing Tree, if it lie in their way; therefore I cannot recommend the Planting of *Abricots* in ſuch Places, where the Eaſt-Winds may blow upon them: For I obſerve, that in *March* thoſe Winds are always moſt frequent; and if they happen to come without Wet, they are infallibly attended with Blaſts, as I ſhall endeavour to explain in another Place. I find that *Abricots*, planted againſt a Weſt Wall, where they are ſhelter'd from theſe murdering Winds of the Spring, ſeldom fail to produce good Store of Fruit; while on the other hand all others in different Expoſures often fail of Fruit, unleſs they have been guarded by artificial Shelters, ſuch as I have ſeen in the Right Honourable the Lord *Parker*'s Gardens, (I think) contrived by his Lordſhip; they are Matreſſes of Straw, fix'd in Frames of Wood, about four Foot wide, and ſeven or eight Foot high, which are made to remove at Pleaſure; ſo that they may always be ſo placed, as to interpoſe between the Wind and the Tree, without ſtifling the Bloſſoms, or beating them off as Mats commonly do.

In the Grafting, or Budding of *Stone-Fruit*, I have obſerv'd, that ſuch Trees as are inoculated near the Root of the Stock, are much more apt to ſhoot out unprofitable luxuriant Branches, than thoſe that are budded, or grafted, five or ſix Foot from the Root. I find the latter to make Fruit-Branches in ſuch plenty, that hardly any Barren-Shoots are found upon them, which ſeems to happen, for the ſame Reaſon I have mention'd

length of Paſſage in theſe St
the Sap takes in its Aſcenſion
thro' the *Plum-Stock*, before
Part where it is to alter its
Bud of the ***Peach***, muſt, I
bute to weaken it, and rob it
riance which it would have
been permitted to puſh out
the Root, where undoubtedly
ſtrong and vigorous.

The ſeveral Kinds of *Ston*
have different Scituations and
Peaches for Example, and *Nect*
ſome forward *Cherries*, ſuch a
May-Cherry, and the *May-Duke*,
ward *Plum* or two, ſhould ha
Wall; and if the Wall happen
high, I would adviſe it to be pl
(*i. e.*) with Dwarfs and Stand
may the ſooner be cover'd.

Abricots, ſome choice *Pears*,
Peaches, may be the

ſet *Plums*, ſome *Winter-Pears*, *Carnation*, and *Morella-Cherries*, with ſome *Golden-Pippins.*

Plums will alſo do well in Standards; and all ſorts of *Cherries*, excepting the ſmall *May*, and the *May-Duke-Cherries*, proſper beſt when they have Liberty. *Almonds* likewiſe will bear very well in the open Ground; and the *Bruxelles Abricot*, whoſe Fruit is ſo excellent, will bear plentifully without the help of a Wall.

The *Peaches* which I moſt covet, are the *Nutmeg-Peaches*, for the ſake of their early ripening, the *Common-Minion*, *Milets-Minion*, the *White-Magdalen*, the *Old-Newington*, *Belgard*, the *Admirable*, and the *Catherine-Peach*, which comes late, and is a certain Bearer. Of *Nectarines*, the *Red-Roman*, and *Orange-Tawny Nectarine*. *Abricots*, the *Maſtuline*, or *Forward-Abricot*, the *Orange* and the *Turky-Abricots* for Walls; and for Standards, the true *Bruxelles*. *Plums*, the *Morocco*, *Imperial*, *Orleans*, *Muſcle*, the two *Perdrigons*, *Queen-Mother*, *Violet*, *Abricot*, *Damaſcene*, *Cloth of Gold*, *or Drap d'Or*, *Royal*, *Bonum Magnum*, and the *White-Pear Plum*; to which we might alſo add the *Damſon*, which in my Opinion is not without its good Qualities.

Cherries; the *Early* or *May-Cherry*; the *May-Duke*; the *Black*, *Red*, and *White-Heart-Cherries*; the *Carnation*, the *Morella*, the *Flemiſh-Cherry*, and the *Common-Black*;

and alſo the *Cluſter-Cherry*, well enough deſerves a Place in our Gardens for the Curioſity of its Fruit.

There has been ſeveral ways practiſed to forward the ripening of Fruit: The late Marquis of *Wharton* had a Glaſs-Caſe made on purpoſe for that End; and by the Help of Fire, againſt the Back of the Wall the Trees were nailed to, and under the Roots of the Trees, had ſeveral Kinds of Fruit very early. But of all the Inventions that I have yet ſeen, or heard of, the Contrivance of the Ingenious Mr. *John Millet*, Nurſery-Man at *North-End*, near *Fulham*, is to be preferr'd: I have ſeen in his Garden ripe *Cherries* in *February*; and *Abricots*, *Roſes*, and *Junquils*, above three Months before their natural Seaſon, and thoſe not in ſmall Quantities, but in as great Abundance as if they had been the Product of Nature alone; and this he does with the Aſſiſtance of Horſe-Dung, judging it to yield a more gentle Sweating Heat than Fire, and is therefore more natural to Plants.

CHAP. IV.

Of the GOOSBERRY, CURRANT, STRAWBERRY, RASBERRY, BERBERRY, *and* PHILBUD.

ALTHO' the Fruits, which I deſign to treat of in this Chapter, are ſo commonly known, that there is hardly any Garden without 'em; yet I am apt to believe, the right Method of Raiſing and Ordering them is not every where underſtood.

Of the *Goosberry* we have the following Kinds, which are chiefly worth our Notice, *viz.* the large *White-Dutch-Goosberry*, which produces an excellent Fruit for eating; the large *Amber-Goosberry*, which I think is better for Baking while they are Green, than to be kept 'till they are ripe; the *Walnut-Goosberry*, which exceeds all others for the Largneſs of its Fruit, which may be gather'd for Baking ſooner than any other; and the *Champain-Goosberry*, which is ripe at leaſt a Fortnight before any of the reſt; and beſides theſe, the *Black-Hairy Goosberry* is pleaſant enough. If I ſhould here enumerate all the other Sorts I have ſeen, it would be to little purpoſe, ſeeing every Year is likely to produce new Varieties from Seeds; and the Rules for the Culture of any one Sort will ſuffice for the reſt that are, or can be rais'd.

This Kind of Shrub may be propagated either by Seeds, Suckers, or Cuttings; the firſt may be ſown as ſoon as they are ripe, and will come up the Spring following: The Suckers ſhould be taken from about the Roots of old Trees when their Leaves are fallen, in open Weather, and tranſplanted in Nurſeries; and the Cuttings likewiſe will take Root, if they are planted in *September* or *October.* Theſe Plants require a ſtrong holding Soil, and may be tranſplanted in *October* with more Safety than in the Spring.

We have three Sorts of *Currants* very different from each other, *viz.* the *Large White Dutch-Currant*, the *Dutch Red-Currant*, and the *Black-Currant:* The firſt is an admirable Bearer, and will ſometimes produce Fruit as big as ſome ſort of *Grapes*, but I think are not ſo pleaſant to the Taſte as the *Red-Currants.* The Kind which bears the Black Fruit, for Variety ſake, as well as on Account of its great Virtue in Medicine, ſhould not be wanting in a Garden, tho' ſcarce one in twenty can like its Flavour: Theſe may be propagated like the *Goosberry*, and delight in the ſame kind of Soil. I have known a curious Man, when the Fruit has been juſt ripe, tie up ſome of the *Red Currant*-Buſhes in Mats, to preſerve the Fruit upon them 'till *Auguſt* or *September*, and ſometimes later in the Year, and it is practiſed by ſome to plant them againſt Walls to make the Fruit come larger; but I have never found them half ſo ſweet as the Standards.

Both the *Goosberry* and *Currant* ought to be kept free from old Wood, never leaving on the Plants any Shoots (if poſſible) that exceeds three Years Growth; for the largeſt Fruit is always found upon the youngeſt Branches: Theſe Fruits are ripe in *July*.

We have three ſorts of *Strawberries*; the *Scarlet*, the *Hautboy*, or *Great White-Strawberry*, and the *Wood-Strawberry*: The firſt is ripe much ſooner than either of the other, eſpecially if it has had the Benefit of a good Expoſure, and a light Soil, which always contributes to quicken Vegetation; however *Strawberries* delight not in any Ground ſo much as that which inclines to Clay: 'Tis in ſuch Land we can only expect their Fruit to be large, and in abundance; witneſs the great Profits which the Gardeners about *Hammerſmith* (where the Soil is proper for making of Bricks) draw yearly from their Plantations of this ſort of Fruit.

The *Great White-Strawberry* ripens next after the Scarlet; and laſt of all the *Wood-Strawberries*, which continue a long while, but chiefly if they be kept ſhaded after they begin to ripen.

As I know no place where *Strawberries* are ſo generally propagated as about *Hammerſmith*, ſo I ſhall preſcribe the ſame Rules for their Management, as are commonly practiſed by the Gardeners of that Place.

They provide a parcel of Horſe Dung and Cole-Aſhes, well mix'd and incorporated together, and lay on a ſufficient Quantity of it upon their Land, to be dug or trench'd in *February* ; then they lay up their Borders three Foot wide, and thereon plant the Slips, of whatever kind they ſee convenient, at about eight Inches apart ; after which they ſet *Beans* for a Crop that Summer ; for the *Strawberry-Plants* will not begin to bear Fruit to any purpoſe till the Year following, and even then not comparable to what they will produce the Year afterward, which is the third Year after Planting ; 'tis then they have a full Crop, if extraordinary Drought does not hinder : But I ſhould have alſo added, after the laying up of the Beds, that at every five or ſix Foot diſtance, they plant *Roſes*, *Goosberries*, *Currants*, or *Sweet-Brier*, which turns to good Account at the Markets, beſides the Advantage of the Shade thoſe Plants give the *Strawberries*.

From a Piece of Ground thus planted, it is hardly to be imagined what Advantage ariſes to the Gardeners, if they are diligent to keep their Crop weeded, and well water'd, if the Seaſon of their Bloſſom be dry.

Early in the Spring they clean them, and fling Earth among them to ſtrengthen their Roots; and that the Ground may not lie too long idle, they plant *Savoy's* and *Cabbages* in the Alleys for the Winter. A Piece of *Scarlet Strawberries*, ſo ordered, will remain tolerable good for about five or ſix Years, but the *Hauboy* and *Wood Kinds*, ſhould be renewed once in three Years, always minding to get the *Wood-Strawberries* freſh from the Woods, and not make uſe of Slips from the Garden, for thoſe degenerate.

But there yet remains many Particulars relating to *Strawberries*, which are not practiſed by theſe Gardeners, as the ſtringing them, or pulling off their Runners in *July*, where the Roots are weak eſpecially, ſo as to leave all the Plants ſingle, which is practiſed by ſome to make the Fruit large.

Again, to make them bear Fruit in the *Autumn*, cut down the Leaves and Flower Stems juſt before the Bloſſoms open, and they will ſhoot out freſh, and bear ripe Fruit about *September*, as I have experienced.

Now if it is deſired to have ripe *Strawberries* in *March*, it may be done by Planting ſome ſtrong Roots in Pots, and putting them on a gentle hot Bed in *January*, giving them what Air may be convenient till they Bloſſom, and moderate Waterings at that time with Water a little warm'd: By theſe Inſtructions, and the Care of an ingenious Gardener, who will rightly defend them from Froſts, or too ſharp Winds, we may have them produce Fruit as I propoſe. I cannot conclude the Culture of this Plant, without mentioning, that I have made Plantations of them in *April* and *May* with good Succeſs; and the ſecond *June* afterwards I have gather'd very good Fruit from them.

The *Rasberry* is the next to be conſider'd; We have two Sorts of them, the *Red* and the *White*; the latter is the greater Rarity, but in my Opinion it is not of ſo good a Flavour as the *Red*: Theſe delight in ſuch Soil as agrees beſt with *Strawberries*, and are propagated by Slips taken from the Roots in *March*, for that is the beſt Seaſon to plant them in: Some Gardeners plant ſingle Lines of them, leaving the Diſtance of about a Foot between the Plants; others make Beds for them of three Foot wide, and plant three Rows in a Bed, both which Ways I find to ſucceed very well: The firſt *Summer* after Planting they will fling up ſome Suckers from the Roots, and put out ſome few Shoots from the old Stems that were left remaining when they were planted; but as thoſe Stems are never left above a Foot long when we plant them out, we cannot expect any Quantity of Fruit from them the firſt Year, nor indeed any vigorous Shoots from the Roots till the ſecond Year, ſo that it will be the third *Summer* after Planting before we muſt expect a full Crop, for the Fruit is always found upon the Shoots of the preceding Year. The chief Culture neceſſary for this Kind of Plant, is to keep them clean from Weeds in the *Spring*, and prune the Tops of the ſtrongeſt Shoots of the laſt Year to leave them about three Foot high; and that Work muſt be done in *March*; as alſo to cut away all dead and weak Branches. The *Rasberry* ripens in the beginning of *July*, and laſts till the End of the Month.

The *Berberry* is a pleaſant Shrub, bearing beautiful Branches of yellow Flowers in the *Spring*, and no leſs delightful Cluſters of red Berries towards the *Autumn*: The Fruit is of a ſharp Taſte when it is ripe, and ſeldom uſed any other way than in Sauces: I have been told, that the Leaves of the *Berberry*, when they are young and tender, may be dry'd to imitate the *Indian-Tea*, which they call *Bohea*; and indeed the Figure of the *Berberry*-Leaf is not unlike it. If any one of my Readers ſhall think it worth his while to make a Trial, he may do it after the following manner: Lay the Leaves freſh gather'd upon a Sieve, placed over a Veſſel of boiling Water till the Steam has ſoftned them; then ſpread them upon a Copper-Plate over a gentle Fire, and move them too and fro till they roll up, which is the Method they uſe for drying their *Tea* in *China*, as I have heard; but I would adviſe ſuch as intend to make the Experiment, not to be over haſty in drinking the Infuſion of ſuch Leaves, before ſome skilful Phyſician has firſt given his Advice. There are two Kinds of this Fruit, one without Seeds, and the other with Seeds; the firſt is ſo rare, that I have yet only ſeen it grow in the Gardens of my worthy Friend *Samuel Reynardſon*, Eſquire, at *Hillington*, among his numerous Collection of curious Plants; but the other is found frequent enough in moſt Gardens; the Plant loves a Loamy Soil, and is increaſed eaſily by Suckers from the Root, or Layers in the beginning of *March*.

The *Philbud* is order'd like the *Hazel*, mention'd in the firſt Part of this Treatiſe, but is allow'd place in our Gardens, on account of its thin Shell, which is the only Excellency it has more than the common *Hazel*, in my Opinion. This and the *Berberry* ſhould be planted in the moſt remote Parts of the *Kitchin-Garden*.

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Fig. I

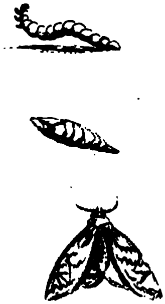
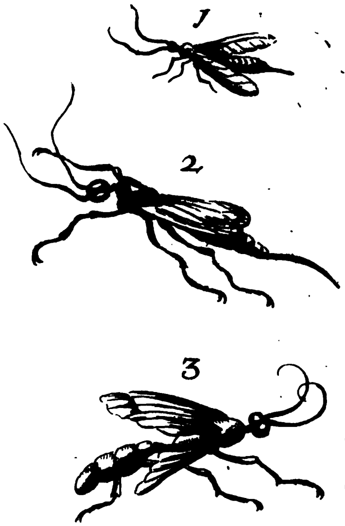


Fig. II.



CHAP. V.

Of BLIGHTS.

AS a *Blight* is the moſt common and dangerous Diſtemper that *Plants* are ſubject to, ſo I ſhall endeavour to explain by what Means *Vegetables* are affected by it; and if I ſhall be ſo happy from the Obſervations I have made, to diſcover the Cauſe of it, the Remedy may be then more eaſily found out, and the Gardener will with more certainty hope for Succeſs from his Care and Labour.

I ſhall be the more particular in diſcourſing upon this Subject, as it will afford me an Opportunity of opening to the View of my Reader a wonderful Scene of Nature, which hitherto has been ſlightly touch'd upon by Writers, or overlook'd, or deſpis'd by unthinking Men; and ſhall endeavour from the whole to draw ſuch Conſequences as may be both profitable and delightful.

Plants of all Degrees are ſubject to *Blights*, which are ſo variouſly communicated to them, that ſometimes a whole Tree will periſh by that Diſtemper; now and then a few Leaves or Bloſſoms only, and perhaps a Branch or two will be ſhrivel'd or ſcorch'd by it, and the reſt remain green and flouriſhing. I have yet never obſerv'd this Diſeaſe to happen among *Plants*, but upon the blowing of ſharp and clear *Eaſterly Winds*, which are moſt frequent in *England* about *March*; but ſometimes happen in other Months. It is very obſervable, that the *Caterpillars* generally attend theſe Winds, chiefly infecting ſome one Sort of Tree more than another, and even then not every where upon the Kind of Tree they attack, but ſome particular Branches only; from which Obſervations I think we may draw the following Inferences; either that the Eggs of thoſe *Inſects* are brought to us by the *Eaſterly Winds*, or that the Temperature of the Air, when the *Eaſterly Winds* blow, is neceſſary to hatch thoſe Creatures; ſuppoſing their Eggs were already laid upon thoſe infected Parts of the Trees the preceding Year.

The *Blights*, which are attended with large *Worms* or *Caterpillars*, ſeem to be rather hatch'd with the *Eaſt Wind*, than that the Eggs of thoſe Creatures are brought along with it; but thoſe *Blights* which produce only thoſe *Inſects* which occaſion the curling of the Leaves of Trees, may proceed from Swarms of them, either hatch'd, or in the Egg, which are brought with the Wind.

Some, perhaps, may object, that the *Eaſt Wind* is too cold to hatch theſe Creatures; how comes it then that we find them hatch'd when thoſe Winds reign? Or is it reaſonable to conjecture, that the ſame degree of Heat is neceſſary to enliven an *Inſect*, as is requir'd to hatch the Egg of a Pullet? The *Inſects* of *Norway*, *Iceland*, and ſuch like cold Climes, muſt certainly have leſs Heat to produce them, than Creatures of the ſame Race muſt neceſſarily have in thoſe Climates which lie nearer to the *Sun*. Every Creature, without doubt, requires a different Period of Heat or Cold to enliven it, and put it in Motion; which is prov'd by ſo many known Inſtances, that I conceive there is no room for any Diſpute upon that Score.

But there may yet be another Queſtion, *viz.* Whether it is not the *Eaſt Wind* of it ſelf that blights, without the help of *Inſects*? But that may be eaſily ſolv'd on my Side; for that if it was the Wind alone that blighted, then every *Plant* in its way muſt unavoidably be infected with its Poiſon; whereas we find the contrary, only a ſingle Branch it may be, or ſome other diſtinct Parts of *Plants*,

And again, to ſhew how reaſonably we may conjecture that 'tis *Inſects* which thus infect the Trees, let us only conſider, that every *Inſect* has its proper *Plant*, or Tribe of *Plants*, which it naturally requires for its Nouriſhment, and will feed upon no other

Kind whatſoever: Therefore it is no wonder to ſee one particular ſort of Tree blighted, when all others eſcape; as for example, that Wind which brings or hatches the *Caterpillars* upon the *Apple-Trees*, will not any way infect the *Pear*, *Plum*, or *Cherry* with *Blights*, becauſe were the Shoals of *Inſects* natural to the *Apple*, to light only upon thoſe other Trees mention'd, they would then want their proper Matrix to hatch in; or if they were hatch'd already, they would periſh for want of their natural Food; ſo that 'tis morally impoſſible that all ſorts of Trees ſhould be blighted at the ſame time, unleſs the Eggs of every Kind of *Inſect*, natural to each Tree, could be brought at one time with the Wind, or that an *Eaſterly Wind* could contain in it at once as many differing Periods of Cold or Heat, as would be requir'd to hatch and maintain each differing Kind of thoſe Creatures.

The common People in the Country ſeem to be of my Opinion, that *Blights* are brought by the *Eaſt Winds*, which they are ſo well ſatisfied brings or hatches the *Caterpillar*, that to prevent the too great Progreſs of *Blights*, it is common for them when the *Eaſt Winds* blow, to provide large Heaps of Weeds, Chaff, and other combuſtible Matter on the Wind Side of their Orchards, and ſet them on Fire, that the Smoak may poiſon either the *Inſects* or their Eggs, as they are paſs'd along. By this Contrivance I have often known large

Orchards preſerv'd, when the neighbouring Parts have ſuffer'd to the Loſs of all their Fruit.

And I have alſo ſeen theſe Fires made with good Succeſs to deſtroy the *Caterpillars* even after they were hatch'd, and had began to devour the Trees, by ſuffocating them, and forcing them to drop to the Ground, where they have been ſwept up in large Quantities and kill'd. I have heard it affirm'd, by a Gentleman of Reputation, that *Pepper-Duſt*, being powder'd upon the *Bloſſoms* of any Tree, will preſerve them from *Blights*; which may be, becauſe *Pepper* is ſaid to be preſent Death to every Creature but to Mankind. Now altho' this laſt Secret is too coſtly for common Uſe, yet it may be of Service in ſome particular Place for the Tryal of a new Tree, where a Taſte of the Fruit is deſired; and beſides, it helps to inform us, that *Blights* are occaſion'd by Inſects, or their Eggs, lodging upon a Plant, and that *Pepper-Duſt* will not ſuffer them either to live, or to be hatch'd.

Another Remark (which to me is Demonſtration) that *Blights* proceed from Inſects, or their Eggs (being brought with the *Eaſterly Winds*) was the total Deſtruction of the *Turnips* laſt *Winter*, on the *Weſt* Side of *London*; about *October* we had dry *Eaſterly-Winds* for a Week or ten Days, and ſeveral thouſand Acres of *Turnips*, which were then well grown, turn'd yellow and decay'd, unleſs in ſuch Places only as were ſhelter'd by Hedges, Houſes or Trees, where they remain'd green till the *Inſects*, which came with the Wind, in about a Week's Time deſtroy'd thoſe alſo. Some Farmers imagin'd that the Birds which were there in great Flocks, had eaten the Leaves of their *Turnips*, and contriv'd all Means poſſible to deſtroy them, 'till I convinc'd them that the Birds were rather Friends than Enemies, and came there to feed upon the *Caterpillars*, which were in ſuch great Numbers, that each *Turnip-Plant* had not leſs than a thouſand upon it; and that *Inſects* frequently paſs in Clouds and numberleſs Armies after this manner, is plain from ſeveral Inſtances, which have happen'd in my Time, and one of them the laſt *Summer* (I think in *June*;) one of theſe Swarms paſſing over *London* were ſuffocated, (I ſuppoſe) with the Smoak of the *Sea-Coal*, and dropp'd down in the Streets, inſomuch that a ſquare Court belonging to the *Royal-Society* was almoſt cover'd with them; theſe were of the *Fly* [illegible] and fully perfected.

[illegible] may be ask'd, perhaps, how theſe *Inſects* [illegible] the *Turnips* only, and not [illegible] *Greens* of the *Fields*, as [illegible] *Parſnips*, and the like? [illegible] has its peculiar *Inſect*, like the [illegible] mention'd: Nay, more than this, the *Inſects* which Nature has deſign'd to prey upon the *Flower* of a *Plant*, will not eat the *Leaves*, or any other Part of the ſame *Plant*. The *Leaves* of *Plants* have their *Inſects* natural to them, the *Bark* and *Wood* likewiſe have their reſpective Devourers; and thoſe ſeveral *Inſects* have other Kinds, which lay their Eggs, and feed upon them.

The Flowers of the *Province-Roſe*, before they are open, produce and nouriſh the Inſect, in Figure 1 of the firſt Plate, after the Eggs have been laid upon them. A. Is the *Nympha* or *Caterpillar*, which feeds upon the *Roſe-Buds*. B. The *Aurelia* of the ſame, which for a Time lies as it were in a State of Death, faſten'd with fine Silken Threads to the Leaves of the *Roſe-Tree*, and at length reſuſcitates and comes forth with Wings adorn'd with curious Variegations of Black and Yellow, C. and eats no more; while it lives in this laſt State, it ſeems to be the moſt perfect, by laying then its Eggs upon the Bark of the ſame Tree (about 100 in Number) after it has coupled with a Male of its own Tribe. This Proceſs from the Egg to the Fly, is by my Curious and Learned Friend Mr. *James Petiver*, F. R. S. made an Emblem of the Reſurrection; the *Nympha*, he obſerves, feeds and grows to a certain Degree of Perfection, as all Animals do; then for a Time is laid up without Motion in a State of Death, and appears at laſt in its utmoſt Perfection, with Wings beautifully adorn'd with pompous Colours, and breaths only the purer Parts of the Air.

The Leaves of Plants have alſo their Inſects. The *Silk-worm*, for Example, upon the *Mulberry*, the *Common White-Butterfly* upon the *Cabbage* and *Plants* of the ſame Tribe: And the *Bark* and *Wood* of Trees have alſo ſeveral Kinds of *Beetles*, which prey upon them, and are large enough to be diſcern'd without a *Microſcope*. There are yet other Kinds which are naturally diſpos'd to feed upon the Fruit of Trees, ſuch as we often find in *Apples*, *Pears*, and *Nuts*; and the Roots of Trees are alſo the proper Food for *Worms* of a different Race from thoſe already mentioned, ſuch as are long, ſcaly, and have many Feet; by ſome call'd *Canker-Worms*, which by devouring the Roots of Trees, cauſe them to languiſh for a Time, and at length die; and the very Pith of Plants is not ſafe from Enemies of this ſort; how often are the *Carnations* and other Flowers deſtroy'd by little Worms which eat their Pith?

And all theſe, if I miſtake not, have their *Icneumon Flies*, which feed upon them, and by the help of fine *Tubes* growing about them, convey their Eggs into the Bodies of the *Nymphæ* or *Caterpillars*, where they hatch as ſoon as the *Caterpillars* are laid up in *Aureliæ*, and feed upon them 'till they are themſelves perfected, and make their Way into the World; this I am ſure of in many Caſes, as I have often ſeen, when that Excellent Lady, the late Curious Ducheſs of *Beaufort* diverted her ſelf with enquiring into the Nature of *Inſects*, that the *Aureliæ* of ſeveral Months have brought only *Icneumon Flies* of different Kinds: See Fig. II. Plate I. Nº 1, 2, 3. The firſt is the *Icneumon Fly*, bred upon the ſmall green *Caterpillar* which feeds upon the Red *Sallow*: The ſecond feeds upon that bred upon *Burage*; and the Third feeds upon the Inſect commonly found upon *Campion* or *Cockle*; and it may be theſe Inſects which prey upon others, are not without ſome others of leſſer Rank to feed upon them likewiſe, and ſo to Infinity; for that there are Beings ſubſiſting, which are not commonly viſible, may be eaſily demonſtrated, if there is any Truth in a *Microſcope*.

The laſt *Winter*, during the moſt ſevere cold Weather, a Friend of mine was deſirous to look into my *Microſcope*, and was ſo impatient that he would not allow me time enough to provide any new Subjects for the *Glaſſes*, but contented himſelf with examining ſome minute Parts of Plants, which had lain between the ſmall *Glaſſes* for above fourteen Months; among them he happen'd to pitch upon a ſmall *Hair* of the *Leaf* of the common *Mouſe-Ear*, when on a ſudden he diſcover'd cover'd a living Creature of the Figure of a *Beetle*, in appearance an Inch in Length, walking between the *Glaſſes*: He was much ſurpriz'd to find it ſo perfect in all its Parts, and gave me the *Glaſſes* that I might obſerve it, and delineate it for him; which I did, and by Computation found it to be more than one thouſand Times leſs than the leaſt Duſt of Sand viſible to the naked Eye. I was then willing to try whether the Cold, which was ſeverely felt by us, was not to that minute Creature equal to the Degree of Warmth, which hatches other Inſects of larger Size; and for that End I held the *Glaſs* about a Yard diſtance from a ſlow Fire about the tenth Part of a Minute; that trifling Heat to us, was ſo intenſe to it, that in that ſhort ſpace of Time, it was thereby burnt to Death, and ſhrivell'd to a fourth Part of its former Size, and ſcorch'd out of Shape; this brought to my mind the *Inſect* Mr. *Ray* mentions, which is hatch'd and dies in a Day, and alſo the ſeveral Periods of Life appointed to the ſeveral viſible Creatures upon Earth; and I could not help reflecting at the ſame time, that as I found, by the help of a *Microſcope*, that Quantity was only computed to be great or little in Proportion to what Objects our Eyes are capable of ſeeing without the help of *Glaſſes*; ſo I alſo imagined, that Space was confin'd to our Underſtanding by the ſame Rule; and that the

Life of that Creature, which lives only one Day, is of the ſame Length or Duration to it in Proportion to itſelf, as the Term of 100 Years is to Mankind; that is, about three Minutes of that *Inſect*'s Life is equal to a Year with us; and the coldeſt Air of the laſt *Winter*, to the Inſects I ſaw, was equal with the *Summer*'s Warmth to ſuch Animals as then only come abroad: For the Heat, which kill'd this *Inſect*, and was as a violent Fire to it, was hardly warm enough to be diſcern'd by me.

It is wonderful to conſider the Fineneſs of the ſeveral Parts of a Creature even ſo minute as this; (for the *Microſcope* has diſcover'd much ſmaller) how ſmall muſt the Organs of its Senſes be in Proportion to its Body! The Eyes, perhaps, a thouſand Times leſs, and the other Parts anſwerable to them; may we then not reaſonably conclude, that with ſuch Eyes it is capable of diſcerning other Bodies, which are as minute, and of as diſtant ſmallneſs to its ſelf, as the ſmalleſt Creature capable of our Sight is to us? For I think it is plain, that every Animal, as their Eyes are greater or ſmaller, or of different Make, have certain Bounds of Sight, beyond which they cannot ſee without help, ſuch as the *Microſcope*, *Teleſcope*, &c.

But alas! How trifling an Object was the *Inſect* I have mention'd in Compariſon to thoſe diſcover'd by Mr. *Lewenhoeck*, in a Quantity of *Pepper-Water*, no bigger than a Grain of *Millet*; in which he affirms to have ſeen above 10000 living Creatures, and ſome of his Friends at the ſame time witneſs to have ſeen 30000, and others above 45000 Creatures moving in that ſmall Quantity of Water? Nay, they tell us, that becauſe they would be within compaſs, they only related half the Number that they believ'd they had ſeen.

Now from the greateſt of the Numbers mention'd, it is inferr'd, that in a full Drop of Water there will be 8280000 of theſe *Animacula*; which if their Smallneſs comes to be compar'd, a Grain of Sand broken into 8000000 of equal Parts, one of thoſe Parts would not exceed the Bigneſs of one of theſe *Inſects*.

Theſe Obſervations of Mr. *Lewenhoeck*, were not only confirm'd by the Famous Mr. *Hook*, but were likewiſe improv'd by him: He tells us, that after he had diſcover'd vaſt Multitudes of thoſe *Animacula* deſcrib'd by Mr. *Lewenhoeck*, he made uſe of other Lights and Glaſſes, and magnified them to a very conſiderable Bigneſs, and that among them he diſcover'd many other Sorts much ſmaller than thoſe he firſt ſaw, ſome of which were ſo very minute, that Millions of Millions of them might be contain'd in one Drop of Water.

This indeed might exceed the Belief of thoſe who are not converſant with good *Microſcopes*; but I am ſatisfied, whoever once underſtands their Uſe, and make Tryal of thoſe made in our own Country by the late Mr. *Mellen*, or thoſe of Mr. *Wilſon* and Mr. *Marſhal*, will not want any Argument to convince them of the Truth of what is here related.

If then it is true, that there are Creatures of that exquiſite Smallneſs here mention'd, and that thoſe Creatures have Life and Motion, as it is evident they have, what muſt we then think of their Muſcles and other Parts, as Mr. *Hook* obſerves? Certain it is (*ſays he*) that the Mechaniſm by which Nature performs the Muſcular Motion is exceeding ſmall and curious; and to the Performance of every Muſcular Motion in large *Animals*, there are not fewer diſtinct Parts concern'd, than many Millions of Millions, which are viſible thro' a *Microſcope*.

Mr. *Lewenhoeck* has lately inform'd us, that upon a nice Examination of the *Ant*, he finds, that it is not wanting of any Part which is judged to be neceſſary and conducive to the Life and Motion of the largeſt *Animals*; and he farther adds, that the Filaments or little Threads which compoſe thoſe ſeveral Parts of the *Ant*, are as large as thoſe which do the ſame Office in an *Ox*, or any Creature of the largeſt Size, ſomewhat like *Silk*, which when it is firſt ſpun by the Worm, is all of one Fineneſs, but may be wove into the broadeſt Satin, as well as ſerve to compoſe the narroweſt Ribbon; the one, only taking a larger Quantity of thoſe fine Parts than the other. And indeed, ſo far as I have obſerv'd, it is the ſame in *Plants*; the *Oak*, the *Gourd*, and the meaneſt *Moſs*, are compo'd of Principles of the ſame Fineneſs.

This Account may ſuffice to ſhew us, that there are Beings ſubſiſting, which are not commonly viſible, and therefore it is eaſie to conceive, that the moſt gentle Air is capable of blowing them from Place to Place, and thro' their extraordinary Lightneſs it is as readily inferr'd, that they may thus be convey'd by the Winds to us from the moſt remote Quarters of the World, but more eſpecially from the *North-Eaſt* Parts, where the Cold is intenſe enough to give Life to theſe ſmall Creatures, and from whence there is not a Sea of a large Extent enough to deſtroy them while they are paſſing over it; for it is my Opinion, that the Vapour which naturally ariſes from the Sea, is much warmer than what generally is evaporated from the Earth, and conſequently inconſiſtent with the Life of thoſe minute Creatures, but chiefly thoſe Vapours which riſe from the main Sea, where the Land or freſh Waters are leaſt prevailing; and therefore, were thoſe *Inſects* to be blown to us from the *North-Weſt* Parts of *America*, I ſuppoſe the length of Sea they muſt then paſs over, would kill them before they came to us, and perhaps is the Reaſon why the Winds from thence are never known to blaſt any of our Trees, and are always much warmer than the *North-Eaſt* Winds, which come over a narrower Sea, which has many Rivers running into it. The *Orange-Tree*, in ſuch particular manner, delights in the warm Air of the Sea, that in the Inland Parts of *Italy* they will periſh by the Winter's Cold, if they are not houſed; and yet ſeveral Degrees more *Northerly*, where they grow near the Sea, they flouriſh, and defie the moſt rigorous Seaſon. It is obſervable, that the main Sea of it ſelf never freezeth (as ſome ſay) not even under the *Poles*, but only in ſuch Places where vaſt Rivers run into it; as in the *Sound*, and in *Hudſon*'s-*Bay*, where it is mix'd with freſh Water, the Froſt has Power over it. It ſeems reaſonable to believe alſo, that the Vapour which ariſeth from the Sea is deſtructive to *Inſects*, becauſe we find how much the *Salt*, taken from the Sea-Waters, contributes to the Preſervation of Bodies from *Putrifaction*, which I think is always attended with *Inſects*; and if the common *Salt* of the Sea-Water is ſo great a Preſervative againſt *Inſects* and *Putrifaction*, I ſee then no Reaſon why the Vapour ariſing from the ſame Fund of Water, ſhould not partake of the ſame Virtue.

The Receipt to prevent *Wheat* from being ſmutty (which is a Blight common to Corn) ſeems to confirm what I have ſaid; and I think we cannot enough commend that worthy Perſon (whoever it was) that ſo frankly communicated it, and ſo generouſly publiſh'd it for the common Good; happy would it be for the Nation, if every one would ſo generouſly contribute towards its Welfare.

The Receipt teaches us firſt to waſh the *Wheat* through three or four ſeveral Waters, ſtirring it round each time with a large Stick backwards and forwards with great Force, and with a Skimmer each time, take off all the light *Wheat*: When this is done, put your *Wheat* into a Liquor prepar'd in this manner.

Put into a large Tub, which hath a Tap, a ſufficient Quantity of Water; then put as much *Salt* into it, as when 'tis well ſtirr'd about, will make an Egg ſwim; then add as much more *Salt* as was before, and ſtir it very well, and to this put two or three Pounds of Allum beaten very fine, and ſtir it about.

This you are to uſe as you do your ordinary *Brines*, only you muſt let your *Wheat* ſteep thirty or forty Hours, for leſs ſignifies nothing; tho' the common Opinion is, that ſteeping ſo long kills the *Seed* in the *Wheat*; but Experience teaches the contrary.

Your

You muſt take your *Wheat* out the Night before you ſow it, and ſift ſome ſlack'd *Lime* on it, which ſerves only to make it dry enough to ſow: 'Tis neceſſary to add ſome more Water to the *Brine* in a Week or Ten Days Time, as it waſtes, and *Salt* proportionable to the Water, and about a Pound of *Allum*.

Note, Many Farmers ſteep their *Wheat* in a *Brine*, yet have Plenty of *Smutty Wheat*, becauſe they don't make their *Brine* ſtrong enough, and take their *Wheat* out too ſoon.

Note alſo, Many Farmers have ſuffer'd greatly by *Smutty Wheat*, eſpecially in a dear Year, when ſuch *Wheat* will not ſell for above five or ſix Shillings a Buſhel; whereas that which is free from *Smut*, will ſell for ten, eleven, or twelve Shillings; and ſuch *Smutty Wheat* being eaten chiefly by the poorer People, and being unwholſome, occaſions Sickneſs; therefore for the Benefit of the Publick this is printed.

From hence we may learn how much *Salt* contributes to the Deſtruction of *Inſects*, which occaſion the *Smut* upon Corn; and it is not unlikely, that ſuch *Smut*, when it happens to be found upon Corn, may cauſe Sickneſs to ſuch as eat of it; for I am very apt to believe, that the moſt Epidemical Diſtempers Mankind is ſubject to, proceed from Poiſonous *Inſects*, which are either eaten unregarded, or are ſuck'd into the Stomach with the Breath; as that worthy Gentleman Mr. *Balle* ſo curiouſly obſerves, in a Letter I have receiv'd from him relating to infectious Diſtempers, which I ſhall annex to this Chapter, as it contains many Obſervations, which may help to explain and confirm what I ſhall offer concerning *Blights*.

I have already taken notice, that every diſtinct Part of a *Plant* has its *Inſect*, which is naturally diſpoſed to feed upon it, and thoſe all different from one another, as well in Shape as in Colour. It ſeems reaſonable enough alſo, that every *Inſect*, as it has a different Kind of Food, is of a different Virtue, perhaps partaking not only of the *Plants* they feed upon, but of the Qualities of each diſtinct Part of thoſe *Plants* which are their Food; for, as I have obſerv'd, that every *Plant* has Channels peculiar to the Conveyance of its ſeveral Juices, ſuch as thoſe minute Pipes in the Wood, which admit only the riſing Vapour from the Root; and thoſe other larger Paſſages between the inner Bark and the Wood, by which that Vapour returns when it is condenſed into a Water: And again, the different Sizes of thoſe Veſſels which make the *Parenchyma* of the ſeveral Barks, and reſpectively receive from the falling Sap ſuch Parts only as they are diſtinctly made to imbibe, not to mention thoſe other Veſſels of different Frame in the Leaves, Flowers, and Fruits of *Plants*, which can only admit of ſuch Particles of Sap, as they are all ſeparately appointed to receive; I ſay, from theſe Obſervations it appears, that every Part of a *Plant* has then its diſtinct Virtue from the reſt; and ſo the *Inſects* feeding upon each reſpective Part, muſt then be of differing Qualities from one another, and I conceive might be of greater Uſe in Medicine than the *Plants* themſelves, if they were once try'd; as the *Cantharides*, which are *Inſects* that I think feed upon the *Roſe-Tree*; the *Alkermes*, which are bred upon the *Shrub Ilex*; and the *Cochineal*, which is an *Inſect* lately found in *Carolina* to feed upon the *Indian-Fig*, or *Prickly-Pear*; all which Creatures certainly contain the fineſt Spirits of the Plants they feed on.

I have often thought that it might be of ſome Uſe, if ſuch *Animals* as are commonly bred for the Food or Nouriſhment of Mankind, were ſometimes fed with particular Diet, ſo to alter the natural Vertue or Quality of their Fleſh; and eſpecially, if we were to practiſe upon ſuch as are frequently uſed in Medicine. The *Thruſhes* in *Italy*, which at one time of the Year feed upon *Myrtle-berries*, have then the Flavour of *Myrtle* in their Fleſh, and conſequently ſome of its Vertue at the ſame Time. So I doubt not but *Snails*, (which differ ſo much from what I call *Inſects*, that they will eat of almoſt any *Plant*) may be made to alter their

Vertues, by feeding them upon ſome particular Sort of *Plant* which we have a Mind to extract any certain Vertue from; but this I leave to be better conſider'd by thoſe whoſe proper Buſineſs it is.

Inſects infect *Plants* ſeveral ways, beſides actually devouring them; as for Example, the *Peach-Trees*, which ſo frequently have their Leaves curl'd up in the *Spring*, and are at that time cover'd with a kind of *Honey-Dew*, are then generally attended with great Numbers of *Ants* which reſort to them; but it is not from the *Ants*, as is commonly imagin'd, that this ſhriv'ling of the Leaves proceed; the *Ants* rather help the Tree than injure it; they come thither to feed upon certain little *Inſects* which harbour on the Back of the Leaves, wounding the *Parenchymous* Parts of them, from whence they ſuck the Juices of the *Plant*; and by that frequent wounding, cauſes ſo many *Eſcars*, that the Leaves cannot avoid curling, and becoming gummy. The *Inſects* I mention may be eaſily diſcern'd without Glaſſes; but being magnified with a common *Microſcope*, appear as large as the third Figure of the firſt Plate. *Plum-Trees* are ſometimes diſtemper'd in the ſame manner with *Inſects*, ſomewhat like thoſe upon the Leaves of the *Peach-Tree*; and the Bark of the tender Shoots of both thoſe Trees is frequently pinch'd by other ſmall *Inſects*; one of which

I have cut out of it, and magnified as in the fourth Figure, Plate I. its Back was cover'd with Briſtles, which grew the contrary way to thoſe commonly found in other Animals: Beſides theſe, ſome *Peach-Trees*, and the *Almond-Tree*, have their Leaves frequently bliſter'd and turn *Red*, without any appearance of *Inſects*; but if we examine them with a good *Microſcope*, we may eaſily perceive the *Parenchyma* of them to be fill'd with little white Worms; which according to the Nature of other *Inſects*, would in time come to have Wings, and I ſhould have likewiſe given a Figure of, if I had not miſlaid the Deſigns of them. Theſe *Inſects*, thus invading the young Shoots, will certainly deſtroy the Trees, if they are not carefully prun'd off as ſoon as they appear, as I conſtantly do whenever I ſee 'em: And I am inform'd, from a Perſon of Honour, that to prevent the Inſults of theſe or any other *Inſects*, he has known it practiſed, to bore a Hole with a ſmall Gimlet ſloaping downwards thro' the *Bark*, ſo as to reach the Wood of the Tree, and pouring into it ſome *Quickſilver*, about half an Ounce, or more, according to the Bigneſs of the Tree, and ſtopping it up, the *Inſects* then harbouring upon it will infallibly be deſtroy'd; but if the *Mercury* reach the *Pith*, the Tree will be endanger'd: And I cannot chuſe but be of his

Opinion, altho' I have not made the Experiment, becauſe I have been Witneſs of the Effect that *Crude Mercury* has had upon *Worms* in Humane Bodies, which anſwers to what my Author has ſaid of its Operation upon the like kind of Creatures in Trees: And if then by putting *Mercury* in one part of a Tree, the whole is ſo affected by it, as to deſtroy the *Inſects* feeding even upon its moſt remote Parts, I think there will be no Occaſion to diſpute the Circulation of *Sap* in *Plants*; but the *Inſects*, which prey upon the Juices of the *Oak*, and have their proper Matrices, or Beds for hatching in upon the ſeveral Parts of that Tree, yet produce other Effects than what I have hitherto mention'd. The *Oak-Berries*, which we find in *May* and *June* upon the *Leaves*, and ſometimes upon the Strings of *Male-Bloſſoms* or *Catkins*, are occaſion'd by a kind of *Fly*, not much unlike a *Flying Ant*, which bites the moſt ſpungy or parenchimous Part of the *Leaf*, or the tender Part of the *Catkins*, and lays its Egg in the Wound, which perhaps, by vertue of ſome Juice which the *Inſect* leaves at the ſame time, inclines the wounded Parts of the Tree to grow over the Egg, ſo as to encloſe it intirely, and make it ſwell 'till it is hatch'd and grown big, and ſtrong enough to eat its way out: I have ſeen of theſe *Oak-Berries* as big as large *Peas*; and when they are at their full Growth, are ſometimes, if they be expos'd to the *Sun*, of a browniſh red Colour.

There is another Kind of *Inſect*, which attacks the more rough Part, ſuch as the *Bark* that encloſes the Bole near the Root of the *Oak*: The Eggs of this are ſhut up in a kind of Berry, ſomewhat leſs than the former, but of a moſt beautiful Red Colour; they are commonly to be found in *May*, as I have obſerved in many Places in *Richmond-Park*. Beſides theſe, the *Oak-Apples* proceed from other Wounds made by *Inſects* of a different Kind in the *Bark* of the tender Twigs, in which they lay many Eggs, that turn afterward to Worms, as I have often ſeen: Theſe which they call *Apples*, no more than the *Oak-Berries*, are Fruits naturally deſign'd by Nature for the Tree; but, in the manner I relate, are produced by Accident, where the ſeveral *Inſects* happen to light.

It would be tireſome to relate all the ſeveral Ways that *Plants* are attack'd by *Inſects*; and indeed would be needleſs to do it, if I was capable, ſeeing that ſo far as we yet know concerning theſe things, two or three General Remedies put in uſe againſt thoſe Creatures, will ſuffice to hinder them from making any conſiderable Progreſs: The *Mattraſſes of Straw*, which I have already mention'd, are good Guards againſt the *Eaſterly*

Winds to ſhelter *Wall-Fruit*; and a good Fence of *Timber Trees* to the *Eaſt* of our *Orchard* will contribute to preſerve our *Standards* from the *Caterpillar*, which if they ſhould happen to come, may be deſtroy'd by the *Smoak* of *Wet-Straw* or *Weeds*: And in caſe our *Peach-Trees*, and ſuch like Kinds of Fruit, ſhould be unfortunate enough to be invaded by thoſe ſmall *Inſects* I have deſcrib'd, the pruning off thoſe Leaves or Twigs, as I have already hinted, is a ſure way to free us from them, as I doubt not would be the Uſe of *Quick-ſilver*, as I have directed. In the Time of the *Great Plague* in *London*, it was propounded to have large Quantities of *Onions* expos'd in Boats upon the *Thames*, which was to have been continually bruis'd, chop'd and moved about, which it was imagin'd would abate the Infection, ſuppoſing the *Plague* to proceed from innumerable Armies of minute unwholſome *Inſects*, which were then floating in the Air, and drawn in with the Breath: If this Propoſal could have had the deſired Effect, then I think we might, by the ſame Rule, deſtroy the *Inſects* upon Trees, by waſhing the Leaves with Water wherein *Onions* had been bruiſed and ſteep'd, or by laying ſome bruis'd *Onions* under our Trees that are the moſt aſſaulted by *Inſects*.

There remains yet one thing relating to *Inſects*, and their Manner of infecting of *Plants*,

Plants, which is ſo curious, and I believe ſo little known, that I cannot well avoid mentioning it; and that is concerning the *Folium-Ambulans*, or *Walking-Leaf*; two Kinds of it I have delineated, Fig. IV. and V. in the firſt Plate, from the *Inſects* themſelves, now in the Cabinets of the excellently Learned Sir *Hans Sloane*, Bart. of that indefatigable and curious Naturaliſt Mr. *James Petiver*, and in thoſe celebrated Collections of Curioſity in *Holland*, belonging to the Famous Mr. *Vincent* of *Harlem*, and Dr. *Frederic Ruyſh* of *Amſterdam*, all of theſe Gentlemen, ſhining Ornaments of our *Royal Society*.

Both the wonderful *Inſects* I mention are brought us from *Amboyna*, where there are many different Species of them, and as I am inform'd, are produc'd in the following manner: The *Inſect*, when it has found its proper Tree of Nouriſhment, lays its Eggs ſeparately in the Buds of it, which hatches when the Buds begin to ſhoot; the *Inſect* then is nouriſh'd by the Juices of the Tree, and grows together with the Leaves 'till all its Body is perfected; and at the Fall of the Leaf, drops from the Tree with the Leaves growing to its Body like Wings, and then walks about; this is not common enough with us to be eaſily believ'd, and what I ſhould not have ventur'd to mention in this Place, if the *Inſects* themſelves were not to be met with in the curious Cabinets of our own Country.

What I account the moſt curious Point belonging to this Relation is, That the *Sap* of any Tree ſhould be ſo naturally adapted to maintain at once both *Vegetable* and *Animal* Life; and by that Means to unite the Parts of two Beings, ſo diſtinct from one another as *Plants* and *Animals*, and circulate the ſame Juices equally in the Veſſels of both. Indeed we have Inſtances enough to ſhew us how neceſſary the Juices of *Plants* are to the breeding up of ſome *Inſects*, and even to confirm that ſome Kinds of *Inſects* cannot be brought to live without their Eggs are properly lodg'd in, and entirely invelop'd with ſome certain Parts of *Plants*; as thoſe *Inſects*, for Example, which Nature has allotted for the Leaves of the *Oak*, and which make the *Oak-Berries*; but that a *Leaf* of a *Plant* ſhould ſo unite it ſelf with an *Inſect*, as to make one diſtinct living Body, is wonderful.

The Curious Mr. *Vincent*, above-mention'd, once ſhew'd me the Picture of a Branch of the Tree which the *Inſect* Fig. IV. grew upon, in which was painted theſe ſtrange Creatures of ſeveral Sizes, adhering to the Tree in the manner I have related: The Head and ſmall Parts of the Legs were of a light brown Colour; and the Wings and other Parts were of the Colour of the common *Bay-Leaf*; which Colours the *Inſect* retains even after it has been dead ſeveral Years.

The other of this Kind, Fig. V. has Wings of the Figure and Size of the Leaves of the *Spaniſh Broad-leav'd Myrtle*; but all its Parts, when I ſaw it, were of a *Feullemort* Colour.

Now as every *Plant* growing upon the Land is ſubject to be infected by *Inſects*, ſo the *Plants* of the Waters are alſo annoy'd by living Creatures that prey upon them. All ſorts of *Gnats* lay their Eggs upon the Waters; and ſo ſoon as they are hatch'd, and poſſeſs that Degree of Life anſwerable to *Caterpillars*, we ſee them friſking about in the Water for a Time, commonly making their Motions in the Figure of an S. Theſe *Nymphæ*, like Land *Inſects*, lay themſelves up at their appointed time, and from that State reſuſcitate and fly away in Groops: Theſe Kinds are bred in ſtagnated Water about *July*. The *Boat-Flies*, as they call them, and ſeveral other kinds of *Water-Inſects*, all have their reſpective Plants to feed on, and breed upon them (ſo far as I yet find) ſomewhat after the manner of Land *Inſects*; It would take too much time to relate the ſeveral Particularities found in ſome of them, contrary to other living Creatures, or to deſcribe their ſeveral various Forms, which would be of little uſe to my preſent Purpoſe; I ſhall therefore now ſubmit theſe Obſervations concerning *Flights* to the Cenſure of my Reader, and conclude with that curious Letter relating to *Plagues* and other Epidemical Diſtempers.

To Mr. BRADLEY, *&c.*

SIR,

UPON diſcourſing with you ſome time ſince about *Blights* upon *Trees*, you ſeem'd to be of Opinion that they were the Effect of *Inſects* brought in vaſt Armies by the *Eaſterly Winds*; and by lodging upon the *Plants* proper for their *Nouriſhment*, they there produced that *Diſtemper* which is call'd a *Blight* or *Blaſt*.

You was then deſirous of what Obſervations I had made concerning *Peſtilential Diſtempers* ſubject to Mankind, which I believ'd to proceed from the ſame Cauſe, that produced *Blights*, *i. e.* from *Inſects*; I have therefore, in anſwer to your Requeſt, endeavour'd to recollect what I have from time to time obſerv'd relating to that Caſe.

To pretend to give a natural Reaſon for *Plagues* or *Peſtilences* that happen in the World, may be thought by ſome to enter too far into the Secrets of the *Almighty*. *Plagues*, as commonly argued, proceeding from, or being the immediate *Finger* of *God*, without the Concurrence of *Nature*;

that they are ſent down from him immediately for the Puniſhment of ſinful Nations, as in ſeveral Caſes mention'd in *Holy Writ*; and doubtleſs ſuch Judgments on Criminals, muſt have often been, and may yet be, to the End of the World.

But however the All-wiſe *God*, it may be ſaid, ſeldom in any thing acts contrary to thoſe Laws of *Nature* which he has inſtituted, rarely working by Violence what may be done by natural Means: So that in this Caſe, ſetting aſide Miracles, and what the *Almighty* can do, if he pleaſeth, by his own Power, my Endeavours will be to find out by what natural Means *Providence* may work to bring that terrible Judgment of *Plague* or *Peſtilence* upon any Country.

It is the common receiv'd Opinion, that the *Plague* proceeds from an Infection in the Air, and ſo undoubtedly it does; but then it will be ask'd, why the Air is not at all times thus infected?

Some will have it from *Steams* or *Vapours* ariſing from ſome *poiſonous Minerals* at certain bad Seaſons, which being by us taken into our Bodies with the Air, ferments and corrupts the Humours of the Blood, and our moſt dilicate Parts, and at length extinguiſheth that Vital Fire in which our Life conſiſts.

But this can hardly be the true Cauſe, ſince few *Minerals* have ſuch mortal *Steams* conſtantly iſſuing from them; but at ſome times only, unleſs it be in the *Grotto del Cane* at *Baia* near *Naples*, and ſome other Places of the like kind.

This *Grotto* is a Hole dug into a Bank near the *Lake d'Averna*, whoſe Water is warm, continually bubbling or boiling up; this *Lake* is cover'd with a Green Scum, and never freezes, lying not far from the famous *Sulfo Terra*, where much *Brimſtone* is made, and where *Smoke* iſſues out of the Ground in many Places. The Entrance of the *Grotto* is hardly wider than a common Door, and not high enough to admit a tall Man without ſtooping, growing narrower towards a Point, a few Yards diſtant from the Mouth; at the Bottom 'tis very wet, almoſt ſtanding Water, with Stones lying in it, and the Sides are alſo moiſt about a Foot or two in a ſtrait Line above the Bottom, which is as high as the *Steam* riſes, and is known by putting in a lighted Torch into the *Grotto*, and lowering it by degrees, 'till the Flame comes below the Top of the *Steam*, and then goes out. The Torch thus extinguiſh'd, the *Smoke* which is then below the *Steam* cannot riſe above it, but ſlowly ſteals out of the Mouth of the *Grotto*, and then aſcending is diſpers'd: Nothing will burn in this *Steam*, nor any Creature either of the Land or Water live in it longer than it can hold its Breath; not even an *Inſect*, as I have experienc'd.

I ventur'd to put my Mouth below the Surface of this ſuffocating *Steam*, and ſucking in a little of it, I found it of a very ſtrong Scent, ſomewhat like *Sal Ormoniac*: It ſeemed to me, after two or three Trials, that 'twas the moſt like ſucking for Breath in a *Vacuum*, it wanted that Subſtance which we find in common Air, and is ſo neceſſary to maintain Life in any Creature.

The common Trial ſhewn to Strangers, is to tie the Legs of a Dog, and lay him on the Ground where this *Steam* riſes; he immediately falls into *Convulſions*, ſets his Eyes, and ſtruggles in the ſame manner as I have ſeen Creatures do in the *Air-Pump* when the Air is exhauſted. The Dog, when he is void of Motion, is quickly drawn out of the *Grotto*, ſome few Paces to the Side of the *Lake*, and his Noſe and Mouth thruſt in and rubb'd in the Mud and Water, by which means he ſoon begins to recover, and in a little time is ſo well, that he returns home with his Maſter.

The Man who ſhew'd us the *Grotto*, when he ſaw that I was going to put my Head into the *Steam*, proteſted againſt it; and when he could not prevail, went away; but I told him, if I ſuffer'd as the Dog had done, he ſhould make uſe of the ſame Remedy, and recover me in like manner; but I ſoon ſatisfied my Curioſity without receiving any Harm.

Somewhat like this, is what I ſuppoſe are call'd *Damps* in *Mines* in *Britain* and other Places, which come only at Times, and are not laſting: Theſe *Damps*, when they riſe, will not ſuffer any Light to burn, and ſoon ſuffocate the Workmen and kill them, if they are not preſently drawn up into the open Air: No other Means has yet been diſcover'd to recover them after ſuch Accidents, excepting a freſh *Turf* be cut and laid to their Mouths, which perhaps may be for the ſame reaſon, that the Mud being apply'd to the Noſe of the Dog, recovers him, after he is drawn out of the *Grotto*.

Upon the Town-Walls of *Leghorn*, and in other Places of *Tuſcany*, they have Holes made like large *Ovens* for the Preſervation of *Corn*; the *Conſervatories* are brick'd within ſide, and coil'd round with *Wiſps* or *Cables* of *Straw*: On their Tops, which are level with the Surface of the Earth, are placed large Stones, with a Hole cut in each of them, big enough to admit Men and Baskets to go down. Theſe Places, when they are fill'd with *Corn*, are cloſely ſtopp'd with Stone-Covers, and Earth flung over them; but hither ſuch *Corn* only is brought as is infeſted with *Weevels* or *Ferments*, beyond the Cure of turning them, when by the Help of this Method all living Creatures in it are deſtroy'd, and the moſt violent *Ferment* it can be ſubject to is ſtopp'd, the *Corn* is taken out and return'd to the Magazines. In *Sicily*, *Barbary*, and I think in all other hot Countries, this is the only way made uſe of to preſerve their *Corn* from ſpoiling by theſe Accidents, which it is never ſafe from after it is thraſh'd 'till it is uſed; and I ſuppoſe theſe *Conſervatories* would have the ſame Effect upon all other Seeds or Grain.

'Tis remarkable, that in and about *Genoua*, where vaſt Quantities of *Corn* are laid up, they have none of theſe Places for curing their diſtemper'd *Corn*, but are often conſtrain'd to ſend it to *Piſa* to be thus brought to it ſelf, there being no Earth near *Genoua* that will produce that Effect.

In my Time one of theſe *Conſervatories* being empty was left open, where ſome *French*-Men were playing at *Bowls*, and one of the *Bowls* falling into it, one of the Company was let down with Ropes to fetch it up, but he was no ſooner down but was ſuffocated to Death; and one of his Companions, who endeavour'd to get him out, was ſo ſenſibly touch'd with the noiſome Vapour of the Place, that before he could get half way he was forc'd to return; but this was accidental, and I ſuppoſe was ſomewhat like the *Damps* in *Mines*, which I have already taken notice of.

The poiſonous *Vapours* I have here mention'd are plainly more deſtructive to Animal Life than any others that have been known, in that they act much quicker upon the Spirits of Animal Bodies, than thoſe which are ſaid to occaſion the *Plague* or other *peſtilential Diſtempers*: And there is this difference likewiſe between them, that a Body poiſon'd by the firſt, will not communicate that Poiſon to another, as People infected by that *Vapour* which cauſeth the *Plague* are known to do; therefore I think it plain, that the moſt nauſeous *Vapour* of it ſelf will not cauſe any *Diſtemper* that is *Epidemical*.

It ſeems then that the *Plague* proceeds from ſome other Cauſe, and that I ſuppoſe to be *Inſects* of that extraordinary ſmallneſs, that they are not to be diſcern'd by the naked Eyes; they are ſo light that they float in the *Air*, and ſo are ſuck'd in with the Breath. Such *Inſects* not being among us commonly, but only when they are either brought to us from ſome remote Place by the *Wind*, or hatch'd or nouriſh'd by ſome Intemperance of *Air*, or from poiſonous *Vapours* riſing from *Bogs*, *Ponds*, *Ditches*, or ſome ſuch unwholſome Funds of ſtagnating Water.

Theſe *Inſects* are various, according to the Nature of the Water or Air they are bred in; their Eggs being firſt laid by ſome flying Animals, which are then hatch'd, and paſſing through the ſeveral Changes common to *Inſects*; at length take Wing, and being drawn in with the Breath, may perhaps be either kill'd in our Bodies, and cauſe a violent Ferment in the *Juices*, or elſe finding proper Nouriſhment, they breed in the *Lungs*, *Stomach*, or other Parts within us, and probably may occaſion thoſe Biles and Breakings-out in the tender Parts of the Body that are call'd *Plague-Sores.*

But theſe *Inſects* are ſome of them ſo extreamly ſmall, that they are only capable of being diſcern'd with good *Microſcopes*; and when they are wing'd, and ſo quite perfected, may perhaps in Swarms be carried from one Country to another by the Wind: It is *Inſects* of ſeveral Kinds and Colours, which cauſes the Surface of Waters to appear ſometimes *Green*, *Red*, or *Black*; which laſt Colour in Water is obſerv'd by the Herdſmen to poiſon the Cattle that drink of it; and they ſay cauſeth the *Murrain*, which is the *Plague* in Cattle, and is very infectious.

It has been obſerv'd that *Plagues*, and the moſt contagious Diſtempers, have commonly happen'd in thoſe Years when the *Eaſterly Winds* have more than ordinary prevail'd in the *Spring* and *Summer Seaſons*; then the Air comes to be infected, and rarely or never at other times. Theſe *Winds* we ſee bring *Caterpillars*, and many differing *Inſects* and

Flies, which meeting with Places fitly adapted to nouriſh them, they are there brought to their winged State, which I conceive is the ſame in the Inviſible Animals as in the Viſible; nor indeed is any Part of the Earth, or Waters, and it may be the pure Air it ſelf, free from the *Seeds* of Life: Nothing is out of Motion, or can be void of it, ſetting forth the Glory and Infinite Power and Wiſdom of the *Creator*, from whence theſe infinite Productions proceed; ſome for one uſe, ſome for another: What we call the Bad, are thoſe which at unſeaſonable times invade by Swarms the Bodies of living Creatures, to whom they are deſtructive, and cauſeth the *Murrain*, *Rot*, and ſuch like Mortal Diſeaſes.

Again, that the *Plague* proceeds from living Creatures brought by the *Eaſterly Winds* ſeems probable; for that ſuch *Peſtilences* are moſt malignant in the *Summer*, after the *Eaſt-Winds* of the Spring have blown, which paſſing over the greateſt Continent of the Earth bring theſe *Inſects* with it; but the contrary Effect has the *Weſt-Winds*, which come to us over the vaſt *Atlantick Ocean*, attended with great Rains. Theſe laſt *Winds* cure the *Plague* (it may be) by carrying back the Remainder of thoſe *peſtiferous Inſects* which yet ſurvive, to the Country from whence they came; and *Froſt* and *Snow* likewiſe ſtops the Infection perhaps by killing them, or laying them to ſleep 'till the next Seaſon, when they may be either brought back again by the *Eaſterly Winds*, or be enliven'd, or freſh Swarms hatch'd by the Temperature of *Air* ſuitable to them.

I have not yet found that any Winds, except the *Eaſt-Winds*, ſuch as paſs over *Tartary*, bring any Infection with them, nor have I ever heard of *Peſtilential Diſtempers* in any part of the World, unleſs in ſuch Places only where the *Tartarian Winds* reach; *Tartary* being a Country full of *Woods*, *Boggs* and *Fens*, it ſeems the moſt capable of producing theſe Creatures in abundance, which may be carry'd by the *Wind* to certain Places in ſearch after their Food, as are *Locuſts* and ſome certain *Birds*, which are known to paſs from one Country to another.

Diodorus Siculus, in his Hiſtorical Library, Book XII. p. 286. ſaith, " The " *Plague* broke out afreſh in *Athens*, when " they had been but lately freed from that " *Contagion*: It raged with that Violence, " that they loſt 4000 Foot-Soldiers, and " 400 Horſe; and of others, Freemen and " Servants, above 10000. And now, be- " cauſe the Courſe of the Hiſtory may re- " quire a Declaration of the Cauſes of this " violent *Diſtemper*, it is neceſſary in this " place to ſet them forth.

“ Abundance of Rain had fallen in the *Winter*, by reaſon whereof the Earth being over wet (eſpecially in low and hollow Grounds) the Water lay in the ſtanding Pools, which corrupting and putrifying by the Heat of the *Summer*, thence proceeded a Miſt of groſs ſtinking *Vapour*, which corrupted the *Air*; and beſides the Want of good Food much advanced the Progreſs of the Diſeaſe; for the Year before, the *Fruits*, by too much Rain, were crude and unwholſome.

“ There was likewiſe a third Cauſe of this *Diſtemper*, which was this: The *Eteſian Winds* (*which I take to be the* Maiſtrali, *or* North-weſt Winds) blew not this *Summer*, by whoſe gentle Breezes the violent Heat of the *Air* was uſed to be allay'd at other times; ſo that the Heat being now more exceſſive, and the *Air* as it were inflam'd, Mens Bodies wanting the uſual Refreſhment, contracted an evil Habit, from whence aroſe *Burning Diſtempers*; and thence it was that many ſeized with this Diſeaſe caſt themſelves into *Pits* and *Wells.*”

I was not in *England* in 1666, when the *Plague* raged in *London*; but I have heard from ſome of thoſe that then were in the City, that the *Summer* was ſo dry, that hardly any Rains fell until *November*, which Drought muſt be occaſion'd by an unuſual Frequency of *Eaſterly Winds.*

Experience ſhews us how much *Inſects* delight in ſtinking Places, and that they increaſe much faſter in uncleanly Cities, ſuch as *London* was formerly, than in cleaner Places; but the City of *London* having been for the moſt part burnt the Year after the *Peſtilence*, its Streets were enlarg'd, many Drains were made, and good Laws put in Execution for keeping the City clean, and it has not had any *Plague* ever ſince.

It is remarkable, that when the *Plague* reign'd in *London*, *Buckler's-bury*, which ſtood in the very Heart of the City, was free from that *Diſtemper*; the Reaſon given for it is, that it was chiefly inhabited by *Druggiſts* and *Apothecaries*, the Scent of whoſe Druggs kept away the *Infection*; which according to my Notion were ſo unnatural to the peſtilential *Inſects*, that they were kill'd or driven away by the ſtrong Smell of ſome ſort of *Druggs*: The Smell of *Rhue*, and the Smoak of *Tobacco*, were preſcrib'd as Remedies againſt the *Infection*, but eſpecially *Tar* and *Pitch-Barrels*; and I have been inform'd by a Perſon of Credit, that the People of *Lime-Houſe* were not affected by it, nor ſome of the *Docks*, perhaps for the ſame Reaſon; ſo alſo the Uſe of *Sea-Coal* may now be one means to prevent the *Plague* in *London*.

The People of *Leghorn* obſerve, that at the End of every eighteen Years they are ſubject continuing to blow almoſt without In ſion 'till towards *Winter*; much as *Di* *Siculus* deſcribes the Year to have been the Great *Plague* was at *Athens*, we that *Summer* our *Maiſtrali*, or *North* *Winds*, as we us'd to have, which ar *Trade-Winds* in all the hot Countries World following the Courſe of the About Nine or Ten in the Morning Winds begin to blow, and laſt 'till S when ſoon follow the Winds from Shore, which blow 'till the next Day a Nine, and then the *Trade-Wind* re-tak Courſe.

The firſt *Infection* began in Houſes the Walls of the Town to the Landw from whence the *Eaſt-Wind* blew, an degrees crept towards the *Sea*; but th *fection* did not touch ſuch Places which inhabited by *Merchants* and

Autumn cauſe *Agues* and *Feavers*, which may be from vaſt Swarms of inviſible unwholſome *Inſects*, which riſe from thence at that Seaſon, but of a different *Poiſon* from thoſe which cauſe the *Plague:* So the like Places about *Civita Vecchia*, *Scandaroon*, and I may mention the *Iſle* of *Sheppy* likewiſe, ſeem to cauſe *Agues.* And it is obſervable, that from the Mouth of the River *Magra*, which divides *Tuſcany* from *Liguria*, along the Sea-Coaſt of *Italy*, as far as *Terracina*, is very unhealthy and ſubject to *Agues* and *Peſtilential Feavers*, being *Marſhy Ground.*

We may alſo obſerve, that in *Turky*, *Egypt* and *Barbary*, when the *Plague* rages, the *Franks*, the *Engliſh*, *&c.* are ſeldom infected with it, which ſeems to confirm my Opinion, that this Sickneſs proceeds from *Inſects*, who having their certain natural Nouriſhments reſpectively appointed them, do not in thoſe Places infect Strangers, who have differing Ways of eating and living from the Natives, and are of a contrary Nature of Body. It would be well worth enquiry, if the People of thoſe Nations, that were in ſtrange Countries in the Times of *Peſtilence*, were alſo free from *Infection.*

King *Charles* the II*d*, when he was told of the Sickneſs at *Leghorn*, ſaid, it muſt have been occaſion'd by the *New Fortifications* which were then building in thoſe

raging *Diſtemper* which was amon
about *London* two Years agon ;
violent and infectious, that if *one* l
others that came within Scent o
even eat where ſhe grazed, was ſ
fected ; it ſeized their *Heads*, an
tended with running at the *Noſe*, a
nauſeous *Breath*, which kill'd then
or four Days. The *Herdſmen* w
allow it to be the *Murrain*, nor c
any Account from whence it did pr
could find out any Remedy againſt
only tell us the unuſual dry *Summ*
the continued *Eaſt-Winds*, were t
ſion of it. This *Diſtemper* had l
two or three Years before it came t
Lumbardy, *Holland* and *Hambroug*
Loſs almoſt of all their *Cattle*. Th
of *Holland* cauſed a *Medicine* to
liſh'd for the Good of thoſe who h

without it. 'Tis remarkable, that no *Oxen* had this Diſtemper, but only *Milch-Cows*, which were more tender than the *Males*. The *Herdſmen*, to keep their Cattle from the Infection, let them blood in the Tail, and rubb'd their Noſes and Chaps with *Tar*; and when any happen'd to die of it, they were burnt and buried deep under Ground. It began at *Iſlington*, ſpreading it ſelf over many Places in *Middleſex* and in *Eſſex*, but did not reach ſo far *Weſtward* from *London* as twenty Miles.

The moſt general Opinion concerning the Cauſe of this *Diſtemper* was, that the *Cattle* were firſt infected by drinking ſome unwholſome ſtanding Water, where 'tis probable ſome poiſonous *Inſects* were lodged and bred; the *Summer* having been extreamly dry, attended almoſt conſtantly with *Eaſterly Winds*, the Graſs almoſt burnt up, and the Herbs of the Gardens almoſt deſtroy'd by *Inſects*; but ſuch as they were (unfit for Table uſe) were given to the *Cattle*. There was likewiſe ſo great want of *Water*, that many were forced to drive their *Cows* five or ſix Miles to it.

The *Electuary*, publiſh'd upon this Occaſion by the *States* of *Holland*, was compos'd of moſt, if not all, the *Druggs* uſed in the moſt ſerviceable *Medicines* that were made uſe of againſt the *Plague* among Men; moſt of which Ingredients we know to be mortal to *Inſects*, as ſtrong-ſcented Roots and Herbs; but above all, *Aromatick Gums* and *Saps* of *Plants*; as *Rhue*, *Garlick*, *Pitch*, *Tar*, *Frankincenſe*, and *Olibanum*; but I believe, before all others, Extractions from the *Cedar*, nothing preſerving Bodies from Worms better than that. Theſe Ingredients are much uſed in *France* and *Italy* to prevent or deſtroy Infection, by burning them and ſmoaking ſuch Bodies. Letters, or any other things as are brought from infected Places, after they have made *Quarantine*, and are not ſuffer'd to come on Shore 'till they have undergone this Operation.

It is not againſt Experience, that *Inſects* can live and increaſe in Animal Bodies: How often do we find Men, Women and Children troubled with *Worms*? What Varieties of thoſe *Inſects* are often voided by them? And how ſhould that be, if they were not either ſuck'd into the Stomach with the Breath, or taken into it with ſome unwholſome Food? For they cannot breed in ſuch Bodies from nothing, without either their Eggs or themſelves are brought thither by ſome Accident: For if they were the natural Produce of Animal Bodies, they would then be alike common to all, which we know they are not.

I have been inform'd, that in the Year 1714, when this *Mortality* among the *Cows* was at its height, that towards the End of the *Summer* ſome Farmers bought in freſh Cattle, and turning them into the ſame Fields, where many *Cows* has died before, they took the Infection and died likewiſe; but the following Spring thoſe Fields were void of Infection, and the *Cows* that were put into them did very well; but what were then put into the *Cow-Houſes*, where the ſick *Cows* had been the Year before, were ſeiz'd with the *Diſtemper* and died; which ſeems to inform us, that it was the Effect of *Inſects*, which thro' the Warmth of thoſe Stalls were preſerv'd from the Severity of the *Winter*'s Froſts; but ſuch as were left in the open Fields, were deſtroy'd by the Cold. I have heard that a Woman about *Camberwell* cured ſix in ſeven of her *Cows*, by giving them once a Week an Infuſion of *Rhue* and *Ale-wort.*

But it may be ask'd, why theſe *infectious Diſtempers*, ſubject to *Men*, *Cattle* and *Plants*, are not univerſal? And why the *Plague* ſhould not be as well in *India*, *China*, the South Parts of *Africa* and *America*, as in theſe Parts of the World? (For I do not find it has ever been in thoſe Places.) This *Query* gives me a farther Opportunity to ſuggeſt, that *Inſects* are the Cauſe of it, and that they are brought with the *Eaſterly Winds.* In the firſt place, ſo far as I can learn, there is not naturally in *America* any one Kind of *Creature* or *Inſect* that is found in any other

Part of the World; and the *Plants* likewiſe are all different from thoſe of other Countries; alſo it is the ſame in *India*, *China*, &c. whoſe Products are quite different from what we find elſewhere. Suppoſing then that theſe peſtiferous *Inſects* are only the Produce of *Tartary*, let us conſider to what Parts of the World they may be carry'd from thence with the *Eaſterly Winds*; and whether *India*, *China*, the South of *Africa* and *America*, are not beyond their reach, or can reaſonably be affected by them.

Whoever conſiders the Diſpoſition of the Land and Water in the Globe, may thus account for the Paſſage of theſe *Inſects*, with an *Eaſterly Wind* from *Tartary*, to all the Parts of *Europe*, *Aſia-Minor*, *Paleſtine*, *Barbary*, and other *South* Coaſts of the *Mediterranean Sea*, whither, 'tis highly probable, they may come, without meeting any thing in their way to obſtruct their Courſe.

The beſt Maps do not lay down any *Mountains* of Note between *Tartary* and the places which have been ſubject to the *Plague*: The *Alps* run parallel with the Winds coming from *Tartary*, and therefore does not any way hinder their Paſſage: The *Mountains* of *Dalmatia* are not high enough to prevent the Paſſage; or if they were, the *Caſpian Sea* is ſufficiently large to let them paſs to the *South* Parts of *Europe*, the *Mediterra-*

nean Sea, and the *North* Coaſts of *Africa*, even to their moſt *Weſtern* Bounds.

Now it may be expected perhaps, by ſome, that theſe *Winds* ſhould yet continue their Progreſs as far as *America*; but as yet, ſo far as I can learn, theſe *Land Winds*, when they have blown with the greateſt Force, and have been of the longeſt Continuance, have not reach'd farther than about three hundred Leagues beyond the *Weſtern* Coaſts of *Europe*, which is a trifle in compariſon of the vaſt *Ocean* between *Us* and *America*: Beſides, it is my Opinion, that the Winds which blow over ſo vaſt a Tract of Land, as theſe *Tartarian* Winds muſt do, that I ſuppoſe convey and ſupport the peſtiferous *Inſects*, are of ſo different a Nature from the *Winds* coming from the *Ocean*, that 'tis likely thoſe Creatures which would ſubſiſt in the one, would be deſtroy'd by the other: So that if I am right in this Conjecture, *America* cannot be ſubject to the *Plague*.

Mount-Atlas, which is a vaſt Ridge of *Mountains*, running from the *Ocean* almoſt as far as *Egypt*, and are back'd with the Deſarts of *Libya*, may very likely obſtruct the Paſſage of theſe *Inſects* to the *South* of *Africa*; and for that reaſon perhaps, ſecure that Part of the World from *Plagues*. So likewiſe *Mount-Caucaſus*, or *Ararat*, which is one of the higheſt Ridge of *Mountains* in the World, running from *Eaſt* to *Weſt*, thro

Perſia and *India*, may ſecure the *South* Parts of thoſe Countries from the *Plague*, by ſtopping the Paſſage of thoſe infectious Creatures, if any *Winds* from *Tartary* ſhould happen to blow them that way: And as *China* lies to the *Eaſt* of *Tartary*, ſo it muſt be *Weſterly Winds* which muſt infect that Country with the *Plague*, if it proceeds from what I imagine: But we do not yet find that *Weſterly Winds* are frequent in thoſe Parts; or if they are, we may be aſſured they cannot blow at the ſame time when the *Inſects* are hatch'd and carry'd the contrary way by the Wind from *Tartary*. We are inform'd, that upon the Coaſt of *China* the Winds are ſo regular, that from *October* to *March* they continually blow from the *North-Eaſt*, and from that Month to *October* the direct contrary Way.

I have now given you what Obſervations I have made concerning peſtilential *Diſtempers*, which I think may, in ſome meaſure, ſerve to confirm your Notion of *Blights*.

I am Your, &c.

ROBERT BALL.

OF

OF THE
Kitchen Garden.

CHAP. I.
Of the HOT BED.

A *Hot Bed* is the common Help made uſe of by *Gardeners* to forward the Growth of a *Plant*, and force Vegetation, when the Seaſon of it ſelf is not warm enough. By this means (if it be managed with Skill) the hotteſt Climate of the World may be ſo nearly imitated, that Seeds of Plants brought from any Country between the *Tropics* may be made to flouriſh: In a word, it is both curious and uſeful.

In order therefore to have a right Underſtanding of the *Hot Bed*, let us conſider what Degree of Heat is required for the Growth of *Plants* we are to raiſe upon it; for Nature muſt be imitated as near as poſſible, and not forced or exceeded, if we hope for Succeſs in our Undertaking.

Heat and *Moiſture* are certainly the Rudiments of Vegetation; and therefore whoever would promote the Growth of a *Plant*, muſt contrive how to have them both in ſuch due Proportion, as that neither one nor the other exceeds thoſe Limits which Nature has allotted for the Growth of *Plants*. A dry *Heat* we find rather ſcorches and ſhrinks a Plant than makes it grow; and wet, if it is not quickly exhaled from the Root of a *Plant*, chills it, and often injures it paſt Recovery. A moderate Sweating *Heat* therefore is the moſt deſirable, ſuch as is rais'd by the Ferment of wet *Straw* or *Horſe-Litter*, which for a time will ſend forth from the Earth lying upon it, that gentle *Steam*, impregnated with Vegetative *Salts*, which we find contributes ſo much to the Growth of *Plants*, beſides the putting thoſe Juices into Motion which are lodg'd in the Root, and circulating them thro' the *Veſſels* of the *Plant*.

The *Steam* which I ſuppoſe to riſe from the *Root* into the *Wood-Veſſels* of *Plants* to furniſh them with *Sap*, Chap. I. Part I. of this Work, will indeed, of it ſelf, keep a *Plant* alive; but then at the ſame time the *Bark*, *Leaves*, and other *Spongy Parts* of a *Plant* (which encompaſſes the *Sap-Veſſels*) if they are over dry, will ſhrink and pinch thoſe *Veſſels* ſo very cloſe, that they then cannot admit the *Sap* to *circulate* thro' them in ſuch Quantity as is neceſſary to ſupport the Plant in Vigour; on the contrary, when the *parenchimous* or *ſpongy Parts* of *Plants* are kept moiſt by the *aſcending Vapours*, which continually riſe round about them from the *Earth*, then the *Sap-Veſſels* are alſo more open, and at liberty to receive the Nouriſhment riſing from the Roots.

To explain this, let us conſider thoſe Plants which are cultivated in Pots, and ſet ſingly in Chambers, and other places of the Houſe for Ornament in the *Summer*; tho' we allow them large *Pots*, freſh *Earth*, and *Water* enough, and *Air*, as much as they have in a *Green-Houſe*; how ſenſibly do they decline in a few Days, which happens only for want of that *Steam* which is always abroad (more or leſs) riſing from the Earth in the Day, and condenſing and falling upon them again at Night.

Nor can the *Pots*, ſet ſingly in a Chamber, have this help as thoſe have which are ſet together for Shelter in the *Winter* in a *Green-Houſe*; the number of *Pots*, in a Collection of *Plants*, affording *Steam* enough to nouriſh one another, which one ſingle *Pot* muſt want.

The like is to be obſerv'd in a dry Seaſon, when we are forced to water Plants that ſtand abroad; they are by that help but juſt kept alive, becauſe the Earth round about them is ſo dry, that it hardly emits any *Steam*, or at leaſt not enough to ſupport them; but when Rain has fallen, we find a contrary Effect; the Vapours then riſe from the Earth every where about the *Plants*, and make them flouriſh: So that I prefer the Floating of Grounds, for the Welfare of many Kinds of *Plants*, before ſimple Watering; but there are ſome particular Sorts which it would deſtroy, as I ſhall explain elſewhere.

A *Hot Bed* then appears to be of Uſe ſo long only as it can ſend out ſuch *Vapour* from the Earth lying upon it, as is neceſſary for the Support of the *Plants*; and when it wants the *Heat* which is requir'd for that purpoſe, it muſt be renew'd; for elſe the Moiſture, which muſt be maintain'd to nouriſh the Roots of the *Plants* growing in it, will chill and deſtroy them. I would not be ſuppoſed here to mean the *Steam* which ariſes from the *Dung* it ſelf, for that is known to be deſtructive to all *Plants*; 'tis the *Vapour* only which the *Heat* of the *Dung* evaporates from the Earth lying upon it, which will help the *Plants*, and that too muſt be temperate and well qualified, leſt it ſcall'd them, which may be moderated according to our Deſire, by laying the Earth upon our *Hot Bed* of a due Thickneſs, anſwerable to the *Heat* below it.

Having thus given my Opinion concerning the Qualities requir'd in a *Hot Bed*, I ſhall in the next place proceed to give proper Directions for making it. The *Dung* of *Horſes* or *Aſſes*, ſuch as is taken freſh out of the Stables or Stalls, is the moſt proper for our purpoſe; it ſhould then be thrown up into a Heap, with a few Sea-Cole Aſhes among it, and very well water'd. In this State, if the Quantity be very large, it ſhould lie to heat about eight Days; but two or three Loads only need not lie above half that time before yôu uſe it. The Bed then muſt be mark'd out ſomewhat more than three Foot wide, anſwerable to the Size of your Frames; the length of it running from *Eaſt* to *Weſt*, ſo that it may face the *Sun*. Some *Gardeners* dig a Trench a Spit deep to make the Beds in, and others ſave that Trouble, and make it all above Ground; I have try'd both ways, and find ſo little difference, that I cannot ſay which is beſt: But I think if the Ground be wet and ſpringy, it is moſt reaſonable to make the *Bed* quite above Ground, leſt the *Dung* be chill'd. In the ſpreading of the *Dung*, we muſt chiefly have regard to lay it equal in every Part, that when the *Bed* comes to ſettle, it may not lie uneven; and beſides, that it may heat altogether: The whole muſt be trodden down from time to time, as freſh Litter is laid upon it, 'till at length the *Bed* is of the Subſtance you deſire, which ought to be (in *Winter*) about three Foot high.

Having thus prepared your *Bed*, ſet on your Frames, and put the Earth you deſign for it upon the Dung, laying it ridge-wiſe, that it may be more conveniently turn'd over as you ſee occaſion, if the *Bed* ſhould burn. When you find the extream *Heat* begins to abate, level the Earth upon it, to ſow what Seeds you deſign; minding always to have upon your *Bed* five or ſix Inches thick of Earth to prevent the extream *Heat* of the *Dung* from ſpoiling your Crop; and that the Roots of whatever you ſow or plant, may always keep free from the Dung, which whether it be hot or cold ſpoils moſt Plants that touch it. In ſhort, to ſee the working of two or three *Beds*, if a Man is careful to make Obſervation of them, will better inform him than any written Directions; for ſome *Beds* will heat ſooner than others. And again, I have known one *Bed* out-laſt three in its *Heat*, which depends partly upon the Nature of the Dung it is made of, and alſo in the true Method of working it. The Frames which cover theſe *Beds* likewiſe, contribute greatly to the maintaining the *Heat* in them. A large Frame requires a greater *Heat* to warm the *Air* it encloſes than a ſmall one: So if two *Beds* were made equally (as poſſible) of the ſame Strength; the one cover'd with a large a large Frame, and the other with a leſs; that with the large Frame would ſooner cool than the other, and perhaps preſerve a *Plant*, when thoſe under a ſmaller Frame would burn: And the too frequent opening of a *Bed* likewiſe contributes to cool it much ſooner than it would otherwiſe be. In a word, rather deſire ſuch *Heat* only in your *Hot Bed*, as will ſuffice to keep out the Froſt, than covet to make your *Plants* grow quick.

But as it is not ſuppos'd that any *Hot Bed*, without ſome Help, can maintain its *Heat* long enough to bring what we plant upon it to Perfection; ſo it is commonly practiſed, when it begins to cool, to cut away the Sides of it ſlope-ways, and laying freſh *Dung* to them, it recovers its loſt *Heat*, which is call'd *Backing* or *Lining* of a *Bed*; and this Work the skilful *Gardeners* will repeat ſometimes five or ſix times in a Seaſon, as they ſee occaſion, rather than make freſh *Beds*.

If a ſufficient Quantity of *Dung* freſh from the *Stable* cannot be eaſily compaſs'd, we yet need not be deſtitute of a *Hot Bed*; ſome *Horſe-Litter* already cold; *Straw* ſteep'd in *Pond-Water* two or three Days; *Graſs*, *Coal-Aſhes*; and, if they can be had, the *Grains* of *Malt* after Brewing, or damaged *Bran* made very wet; if they are thrown together in a Heap, and well water'd, will ferment and heat as well as any Dung we can deſire.

It

[illegible]
gether well mix'd, to be ſcreen'd or
when it is wanted: Rotted *Leaves*,
conſum'd, are alſo good if *Dung* is
ing.

CHAP. II.

Of MELONS, CUCUMBERS
MUSHROOMS, *their* Culture.

HAVING in the foregoing (
ter given the neceſſary Dire
for preparing a *Hot Bed*, I
now proceed to offer ſome (
vations and Experiments I have made i
Culture of *Cucumbers* and *Melons:* An
concerning the raiſing the *Plants* for th
neral or *Summer* Crop, for 'tis that we

be moderately warm, and in good temper, will come up and be fit to plant out four Inches a-part about a Week after ſowing; they may thus remain 'till their firſt Leaf is about the bigneſs of a Crown-piece; and then, when the ſecond or third Joint appears, cut off the prime Leader from each Plant, near the *Ear-Leaves* or *Lobes*, and they will each of them quickly put out three other *Runners*, which will produce Fruit plentifully; and thoſe alſo are commonly prun'd at every third or fourth Joint when they come to run; this is the common way.

About the latter End of *April*, or the firſt Week in *May*, the *Melon* Plants, thus rais'd, will be fit to plant upon Ridges, which ſhould be made thus: Cut a Trench about two Foot and half wide, and ſixteen Inches deep, in which lay of Horſe-Litter, prepar'd as I have directed for the *Hot Bed*, about two Foot thick, which will raiſe it ſomewhat above the Surface of the Ground: In this Work take care to ſpread the Dung equally, and tread it over gently to ſettle it; then at the diſtance of about four Foot in the middle Line of the Ridge, make Holes about ten Inches over, and about ſix Inches deep, and fill them with the prepared Earth: After this cover the whole with the ſame Soil, about five Inches thick, and make them into flat Beds four Foot wide, for the *Vines* to run upon.

About two or three Days after the Ridges are thus prepar'd, plant two *Melon Plants* in each Hole, ſprinkling them with Water (that has been warmed in the *Sun*) and covering them with Square or Bell Glaſſes; immediately upon which, either Mats or Straw ſhould be put to keep the *Plants* from withering by the *Sun*'s Heat, 'till they have ſtruck Root; and ſo likewiſe ſhould *Cucumber Plants* be ordered, if they are planted out upon Ridges at this time of the Year, but they require no pruning.

About the latter End of *May*, or a Fortnight after planting, they will be in a growing Poſture; and then if the *Eaſterly* dry *Winds* are ceas'd, tilt up the *Glaſſes* about an Inch in the Heat of the Day, to give them Air for two or three Hours, that by degrees they may be harden'd to the Weather. It is now I cannot help taking notice of two or three things practiſed by the *Gardeners* in the *Culture* of *Melons* and *Cucumbers*; which altho' they may perchance be generally practiſed, yet I am ſure they deviate from the Laws of Nature; and Experience has ſhewn me, that their Work in thoſe Points is needleſs, and might better be avoided. In the firſt place, when a *Melon* or *Cucumber-Plant* is in Bloſſom, it is cuſtomary for them to pull off all the falſe Bloſſoms, which they ſay would weaken the Plant; but if thoſe are the Male Flowers, as they ſeem to be, it is them that are ordained by Nature, to ſet the Fruit, (which I think I have already explain'd.) In the next place it is a common Practice to lay the ſeveral Leaders of the *Vines* at equal Diſtances from one another, and often lift them up to view the young Fruit, which is very hurtful; for that the Veſſels which convey the Juices to the Fruit are very tender, and ſubject to be bruiſed by the leaſt bending from their Place of natural Growth. But yet more than this, I have ſeen a Bed of *Melon Plants*, which an Ingenious Profeſſor of *Gardening* has prun'd and laid in order (as he call'd it) with great Dexterity, and had no falſe *Bloſſoms* left upon them, that have from time to time offer'd abundance of *Fruit Bloſſoms*; and by being frequently handled and diſturb'd, have not ſet one Fruit; while on the other Hand two other *Plants* of *Melons*, which were ſown later, by a Month or more, and had been diſregarded, ſurpriz'd him with ſeveral large Fruit, when he hardly expected to find them in Bloſſom: And ſo in the *Vines*, for forward *Cucumbers*, the Fruit that ſets firſt ſeldom comes to Perfection, becauſe upon all Occaſions the *Vine* is taken up to look how it comes forward; but in the moſt remote Corner of the *Bed*, where the *Plants* are the leaſt regarded, commonly comes the firſt perfect Fruit. And laſtly, I find another Practice too frequent, which I account as unreaſonable as the others, and that is the expoſing a young ſet Fruit to the *Sun*, by taking away the Leaves from about it. A Gardener of ſmall Experience may know that Fruit of any Sort grows beſt in the Shade, and that the immediate Heat of the *Sun* is only neceſſary for the Ripening of Fruit, and not for the Growth of it; for the *Sun-Beams* falling directly upon a *Plant* dries and pinches the *Veſſels* of it; ſo that the *Sap* wanting a free Paſſage, it is impoſſible it can fill the *Plant* ſo quickly and plentifully, as it would do if the Parts were larger and more open, ſuch as they are always in the Shade; and that this is Truth, I appeal to common Experience, whether Fruit growing in the Shade, is not larger than the ſame Kind growing in the full *Sun*.

In *Spain*, *Portugal*, and the *South* Parts of *France*, the *Melon Gardens* are ſeldom regarded after they are ſown, 'till the Fruit begins to ripen. And I have been inform'd by ſome Inhabitants of thoſe Places, that they never fail of good and large Fruit in great Quantity, altho' they give them no other Dreſſing than what is neceſſary to prepare the Ground for the Reception of the Seeds.

It was the Opinion of ſome of the Ancients, that Women ſhould not always be ſuffer'd to come among Plants, for that at certain Periods the very Approach of a Female was pernicious and deſtructive to them; but that Notion, with many others of the like Nature, have long ſince been deſtroy'd by Experience to the contrary, and ſeems only to have been maintain'd for want of better Judgment.

But now ſuppoſing our *Melons* are fully ſet, we may then count about forty Days to the Time of their ripening, which I think is obſerv'd as a Rule among moſt experienc'd *Gardeners*: Give them gentle Waterings now and then, if the Earth be extream dry; for *Melons* do not delight in abundance of wet, neither will the *Fruit* be well taſted if the *Plants* are kept too moiſt. But *Cucumbers* love frequent Refreſhings of Water, and will not proſper without it. Upon the Setting of a *Melon* it is commonly practis'd, and with good Reaſon enough, to pinch or prune off the running Branches two Joints above the *Fruit*; ſo that all the *Sap*, appointed for the Nouriſhment of that Branch, may be turn'd into the young Fruit for its Nouriſhment. This may contribute to make the *Fruit* large, if it be well guarded with *Leaves* from the ſcorching Rays of the *Sun*, during the Time of its Growth: But as ſoon as it is fully compleated, then indeed it cannot well be too much expos'd to the *Sun*'s Heat, even to receive it thro' a Glaſs, which will forward its ripening, as may be known by the agreeable Odour it will ſend forth when it is fit for the Table.

For the more certain producing of *Melons* of a right Flavour, let me adviſe that no *Cucumber Plants* be ſet near them, leſt the *Male Duſt* of the *Cucumbers* ſhould happen to be carry'd with the *Wind* upon the *Bloſſoms* of the *Melons*, and perhaps ſet them for Fruit, which will then certainly give the *Melons*, ſo produced, the Reliſh of the *Cucumber* in Proportion as the *Farina* happens to fall in greater or leſſer Quantity. See Part I. Chap. II. *Of the Generation of* Plants.

During the Growth of the *Vines*, the Earth they run upon ſhould be carefully kept weeded and ſtirr'd gently on the Surface; for the Roots both of *Melons* and *Cucumbers* are tender, and always ſhoot out in length as far as the Branches reach: But ſome indeed more than others, are ſubject to run into *Vine*, and that for two Reaſons: *Firſt*, All *Plants*, either of *Melons* or *Cucumbers*, as their Fruit is greater or ſmaller, produce *Vines* of greater Size, or leſſer Proportion. I have known *Vines* of large *Melons* that would ſhoot (if they were left at liberty) about ſix Foot in a *Summer*, and the ſmall Sorts have not grown two Foot; and ſo in *Cucumbers*, one Root of the large *Turky Kind* has produced as much *Vine* as four or five Roots of the ſhort *prickly Cucumber*, which ought to be conſider'd when we plant the Ridges; one *Plant* of a large Kind, if it thrive, will be enough for one Hole, when perhaps of ſmaller Sorts, three or four may be neceſſary for the ſame Purpoſe. But, 2*dly*, All freſh *Seeds* of *Melons* and *Cucumbers* will produce much larger *Vines* than thoſe *Seeds* which have been kept ſeveral Years. New *Seed* is apt to draw ſuch plenty of Nouriſhment, that it is ſeldom prolifick; for too haſty thriving is ever an Enemy to Breeding or Proleficity. So on the other Hand, when I have ſown *Melon* and *Cucumber-Seeds* of ſeven or eight Years old, the *Vines* have been cloſe jointed, and more ſubject to produce Fruit.

The *Italians* have a *Melon* which is commonly ripe about *Chriſtmas*, and eſteem'd among them as a Rarity; ſome of the *Seeds* of it are now in ſeveral Gardens in *England*; but I know not whether every one is acquainted with the right Method of its Management, therefore I ſhall venture to give my Advice concerning the raiſing and preſerving that Rarity of the *Winter*: The *Seeds* ſhould be ſown towards the latter End of *April*, or in *May*, in a Bed moderately warm; and the *Plants*, when they are come up, be ſo ordered, that the Fruit ſhould not come to its full Growth 'till the latter End of *September*, or middle of *October*; the natural Warmth of the *Summer*, without any Art, will be ſufficient for that End, 'till the cold Evenings in *Auguſt* begin to approach; then it will be neceſſary to ſhelter both the *Plants* and *Fruit* from the *Froſts* and cold *Dews*, 'till you think your Fruit will grow no bigger; and in the Heat of the Day, ſtrip the *Plants* of their *Leaves*; let the Sun then dry the Stalks, and pull them up by the Roots to hang up afterward in a *Green-Houſe*, or ſome ſuch well-expoſed Place, to dry more thorowly; after which they may be tied up by the Stalks in a dry Room, or laid in Cheſts of Bran, or very dry Sand, to keep them from the *Winter Air* 'till *Chriſtmas*; if they are not then ripe enough, wrap them in a Cloth, and lay them in a Horſe-Dunghil for about Twenty-four Hours, which will ferment their *Juices*, and cauſe Ripeneſs, as I have heard, and am apt to believe.

But ſeeing that the Pride of the *Gardeners* about *London* chiefly conſiſt in the Production of *Melons* and *Cucumbers* at times either before or after the natural Seaſon, I ſhall alſo preſcribe ſome Rules for the Raiſing and Cultivating them at thoſe times, which I ſhall lay down in as plain Terms as poſſible.

Moſt of the *Gardeners* I am acquainted with make their *Seed-Bed* for theſe *Plants* in *January*, altho' ſometimes the Ground is cover'd at that time with *Snow* near a Foot thick; but I muſt confeſs, I ſhall never follow that Method while I have any regard to the Ways of Nature: For is it reaſonable to believe, that young Plants, tender as they muſt be when they are thus juſt forced out of the Ground, can be able to withſtand the leaſt *Air* from abroad, when *Froſts* and *Blaſts* continually reign? And to preſerve them without *Air* is as impoſſible: Therefore to go more reaſonably to work, prepare a *Hot Bed* about four Foot ſquare, and two Foot high, in the firſt Week of *October*, and ſow the *Seeds* both of *Melons* and *Cucumbers* in it, when the Heat of it is moderated; a Week after they are come up, plant them four Inches apart on the ſame *Bed*, after having ſtirr'd the Earth very well: In this Month the Days are commonly warm, and in ſuch Weather they ought to have as much *Air* as you can poſſibly give them; but the Nights are uncertain, and therefore the *Plants* muſt then be cover'd up cloſe with the *Glaſſes* and *Mats* over them. In this firſt raiſing of the *Plants*, a skilful *Gardener* may make them as hardy as he pleaſes; for it is not his Buſineſs ſo much to draw or force them, as to ſtrengthen them againſt *Winter*.

All *Annuals* are as naturally diſpoſed to live from the Autumn to the Spring, if they are kept from flowing in the *Winter*, as they are commonly known to flouriſh in the *Summer* Months; and both *Cucumbers* and *Me-*

SECT. III.
Of MUSHROOMS.

WHoever has been accuſtomed to eat *Muſhrooms*, will certainly allow them to be one of the greateſt Dainties the Earth affords, eſpecially the *Morel*, *Trufle*, and *Champignion*; the two firſt have been found in but few Places in *England*; but I am apt to believe they are as plentiful with us as the other, if they were skilfully ſought after; they are to be met with in the Woods; the *Morels* chiefly appear in *April*, and the *Trufle* about that time may be dug out of the Ground, for they never appear above the Earth. Thoſe who make it their Buſineſs in Foreign Countries to gather the *Trufles*, have only one way (as I can learn) to find out where they grow, and that is by the help of a Hog, who they lead in a String thro' the Woods, ſuffering him to root up the Earth as he goes along; for Swine being very voracious of them, diſcover them by their Smell, and turn them out of the Ground; of theſe Kinds I have not known any that have been propagated by Art, as the *Champignions* have been, which tho' this laſt kind is common enough in many Places in *England*, without any Culture, yet it turns to good Account to raiſe them in our Gardens, ſince the Trouble of doing it is not conſiderable, and their Uſe begins to be known. The true *Champignion* has its Fleſh very white, firſt appearing like a Button, with a Footſtalk adhering to it, the Chives within it are of a Fleſh Colour, and as the Cap of it explains it ſelf, thoſe Chives become darker by Degrees, and are at length black: I have ſeen ſome of the Caps when they have been fully explain'd about ſix Inches over, and of a conſiderable Thickneſs. This kind is the only ſort I can recommend for its Goodneſs among the *Cap-Muſhrooms*, and then only when they are freſh and free from Worms, which are apt to breed in them, their Stalks eſpecially, and ſuch are not accounted wholſome. We commonly find this ſort growing in rich Paſture-Grounds about the latter end of *July*, or in *Auguſt* and *September*, after Rains have fallen.

The Obſervations I have made concerning the natural Produce of *Muſhrooms*, ſeem to diſcover that they are produced by ſome Putrifaction in the Earth, or in thoſe Bodies they are apt to grow upon; we have not in *England* leſs than 100 different Kinds that I have obſerv'd, beſides thoſe very minute Sorts that can only be diſcern'd with the Microſcope in the Moldineſs of Fruit and Liquors, which laſt Kinds are ſo quick of Growth, that in leſs than twelve Hours time they are perfected; and ſhedding their Seeds, ſeveral Hundreds of the ſame Kinds immediately vegetate; whence it is that Moldneſs ſo ſoon overſpreads thoſe Bodies it once infects.

The Rings of *Muſhrooms*, which are often ſeen upon Downs, Plains, and Commons, are called by the Country People *Faries Dances*; theſe are not always of one Sort of *Muſhroom*, but various, according to the Soil that produces them. It is obſervable, that the Graſs is always much greener and ranker in the Line where thoſe *Muſhrooms* appear, than in other Places of the ſame Grounds, which I have often wonder'd at, as well as the exact Figure of a Circle they have repreſented. When I enquired into the Reaſon of this ſtrange Production, I diſcover'd two Things worth Obſervation; the firſt was, that juſt under the Turf where the *Muſhrooms* were growing, was a Tract or Path made by *Piſmires*, which was not only hollow in many Places at that Time, but the very Covering of that Paſſage was made of Earth extreamly fine, which thoſe Creatures had flung up: The Fineneſs of the Earth wrought by thoſe laborious Animals might very reaſonably contribute to the extraordinary Vegetation of the Graſs growing upon it, and the Hollowneſs of the Ground underneath might produce that Moldineſs within it, which afterwards might be formed into *Muſhrooms*; for it has always been my Opinion, that if Earth is made extreamly fine, and by that means the *Salts* of it more at liberty to act, whatever grows upon it will be much more vigorous,

vigorous. Again, we find by Experience, that in ſuch Places where the Ground lies hollow near the Surface, it always turns muſty and moldy.

But 2*dly*, *Garden-Snails*, the large black *Dew-Snails*, and others without Shells, call'd *Slugs*, when they couple, always make choice of ſhort Graſs to creep upon; It is their manner, when they generate, to take a large Compaſs upon the Ground, and meet one another: Thus I have ſeen them creep into a Circle for more than half an Hour, going over the ſame Ground at leaſt twenty times before they could join, leaving upon the Graſs where they crept, a viſcous ſhining Matter. So that it may be, that Slime, when it putrifies, may produce the *Muſhrooms* we find growing in Circles upon Commons; and I am the more apt to believe it ſo, becauſe I have more than once obſerv'd, that where a *Snail* has left ſuch a Tract upon the Graſs, a few Days afterwards I have found *Muſhrooms* to come up: But it muſt be obſerv'd, that ſuch as come up in this manner are not fit to eat. However, I ſuppoſe from Hints of this kind it was, that the edible Kind was firſt propagated in the Garden.

It is practiſed in *France*, to dig a Trench five or ſix Inches deep in the Ground, and lay in it either the Dung of *Horſes*, *Mules*, or *Aſſes* Ridge-wiſe, in the Shape of an *Aſs*'s Back; then cover the Dung about two or three Inches thick with freſh Earth, ſuch as is juſt taken from under a Turf, rather ſandy than otherwiſe, and then cover the whole Bed either with Straw or dry Litter, as well to defend it from the Froſt in the *Winter*, as from the ſcorching Heat of the *Summer*'s Sun. The Bed being thus prepar'd, water it twice or three times a Week, without taking off the Covering of Straw, and in about two Month's time the *Muſhrooms* will begin to appear, and muſt then be cut as they come up, and not drawn up by the Root. Theſe Beds may be made every Month to produce *Muſbrooms* all the Year about.

The late Famous Mr. *Harriſon* of *Henly* made *Muſhroom* Beds much after the ſame manner, only inſtead of Horſe-Dung he made uſe of old Thatch, which he told me turn'd muſty, and grew moldy much ſooner than Horſe-Dung, and would produce *Muſhrooms* quicker, and in greater Plenty; but either way will do very well.

So I have likewiſe known the *Melon* Ridges, which have been made as I have directed, about Autumn to produce *Muſbrooms*, eſpecially if the Earth upon them has not been of any great Subſtance; and that Straw or Litter has been laid upon them, and frequently water'd.

It is ſaid, that the Cuttings of the *White Poplar* or *Abele* about the Root, being ſteep'd in hot Water, well fermented with *Yeſt*, will produce very good *Muſhrooms* in a few Days: And it is likewiſe reported, that the looſe Chips of the ſame Tree, being buried in a decay'd Hot Bed, will do the like.

About *Naples* there is a Sort of *Stone* which produces good *Muſhrooms*, if it be laid in a moiſt place, or well water'd.

CHAP. III.

Of ESCULENT ROOTS, *or ſuch as are proper for Table Uſe.*

THE *Roots* which are commonly made uſe of for the Table are *Parſnips*, *Carrots*, *Turneps*, *Skirrets*, *Scorzonera*, *Beets*, *Radiſhes*, *Horſe-Radiſh*, *Potatoes*, *Jeruſalem-Artichoke*, *Onions* and *Leeks*, and their Kinds.

SECT. I.

Of the PARSNIP.

TO begin with the *Parſnip*; it affords a large ſweet *Root*, very nouriſhing, and of great uſe in the *Winter*: This Plant delights in a rich Soil, where the *Root* of it will become very large, but ſhould not b eaten 'till the Froſts have entered the Ground The *Seeds* of it are ſown in *March*, an will come up in about three Weeks time when they have been above Ground abou Month, they muſt be hough'd, leaving th ſpace of about five or ſix Inches between th Plants. A ſkilful *Gardener* will ſow *Radiſhe* among them, which in about forty Days ma be drawn off; or ſometimes *Spinage*, whic will alſo be fit to cut before the *Parſnips* begin to ſpread. And indeed it is not the leaſt part of a *Gardener*'s Skill to underſtand how to double Crop his Ground with ſuch thing as will not ſpoil one another. After the firſt houghing of the *Parſnips*, keep them a clean from *Weeds* as poſſible, 'till they a full grown, and then take them up and kee them in *Sand* for Uſe.

SECT. II.

Of the CARROT.

CARROTS delight in ſandy Soil, wher their *Roots* will grow to a great Bigneſs and be much ſweeter, and more free fron Worms than thoſe which are ſown in ric Garden Ground. Sow thoſe you deſign fo *Winter* Uſe at the ſame time you ſow *Parſnips* and in the ſame manner fling in among the *Radiſh* and a few *Lettuce*; when they ar

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come up, hough them as I have directed for the *Parſnips*, and take them up when they are full grown, to be kept in Sand for *Winter*. About *London* the Gardeners are curious to have young *Carrots* for the Spring, which they raiſe in the following manner. Towards the End of *July* they prepare a Piece of Ground, and ſow it when it is moſt likely to rain; and about *Michaelmas* (if the Seeds be good) and the Weather has been favourable, the Roots will be ſomewhat larger than a Tobacco-Pipe, and the *March* following will be fit to draw for the Table; but this Crop muſt be ſoon gather'd, leſt they run to Seed, which they will certainly do in *May*, and then they will not be fit to eat. But that there may not want ſome to ſucceed theſe, I have known an ingenious *Gardener* make a hot Bed in *February*, which he cover'd about ſix Inches thick with Earth, and ſow'd it with *Radiſh* and *Carrot-Seed*, covering it in bad Weather with Mats upon Hoops. The *Radiſhes* will ſoon be fit to draw, and the *Carrots* be ready for the Table about *May*, when the Spring Crop is gone.

SECT. III.

Of the TURNIP.

TURNIPS have many Excellencies, and are more generally propagated about *London* than any other Root; they are a wholſome Diet, and are of extraordinary Uſe to the Farmer for feeding Cows and Sheep. This kind of *Root* is always ſweeter in a ſandy Soil than any other Ground, but will have larger Roots if the Land be ſomewhat inclinable to Loam. From the middle of *July* to the tenth of *Auguſt*, and not later, the Seeds may be put into the Ground, that the Roots may have time to apple (as they call it) before *Winter.* When the *Plants* have two or three Leaves a-piece, they ſhould be hough'd at the Diſtance I preſcrib'd for *Carrots* and *Parſnips*; and this Crop will be off time enough in the Spring either to ſow *Barley*, or any other Grain or Seed on the ſame Spot. It is ſeldom practiſed, tho' I think it would be very acceptable, to provide *Turnips* for the *Summer:* And indeed I ſee no reaſon why we may not have them all the Year about: We may ſow them in the Spring as well as at Autumn; but planting them out from Seeding-Plants in the Spring and Summer Months will do much better. I have more than once known the Experience of this way, and find it to anſwer as one would deſire.

SECT. IV.

Of the SKIRRET.

THE *Skirret* has a very agreeable Root, altho' it is propagated but in few *Gardens*; and it may be, the Rarity of it is owing to the want of the right way of Cultivating it. We may propagate it two ways, either by ſowing the Seeds in *March*, or by tranſplanting the *Off-ſets* from the *Roots* in that Month: It delights in a light rich Soil, ſomewhat moiſt, which I find contributes to make the Roots large. About nine Years ſince a *Gardener* in *Surrey* ſent to me for ſome *Seeds* of this *Plant*, and ſow'd them in a black moory Soil, which had lately been a Plantation of *Aſparagus*; in that Spot of Ground he had the largeſt *Skirrets* I ever ſaw, and very ſweet; but about *London* 'tis more generally practis'd to raiſe them from Slips or Sets, which muſt be done thus: In *March*, when the Leaves begin to put forth, take them out of the Ground and part them into as many Slips as you can take off with *Roots*; but be ſure let only the freſh ſpringing *Fibers* remain on them, and not any of the old *Roots*; then prepare *Drills* about four or five Inches deep, to plant them in five or ſix Inches a-part, and keep them well water'd 'till their Roots are full-grown; then take them freſh out of the Ground, as you have occaſion to uſe them. Some ſay the *Roots* will be larger if they are not ſuffer'd to run to Seed.

SECT. V.

Of SCORZONERA *and* BEETS.

SCorzonera, or *Spaniſh Salſifie*, has a Root, which in my Opinion is no leſs pleaſant than the former; it loves a light Soil, and is eaſily raiſed by ſowing the Seeds in *March*: And *Beets* alſo, both the Red and White Kinds, are raiſed in the ſame Month from Seeds, and delight in a ſandy Soil.

SECT. VI.

Of the RADISH.

I Have already mention'd the *Radiſh*, as a *Root* which might be ſown promiſcuouſly among other Roots in *March*, but ſome Particulars in the *Culture* of it yet remains worthy the Knowledge of my Reader. The Soil it chiefly covets is Sand, or other light Ground well wrought with the Spade: It may be ſown in ſuch Land any time between *February* and *September*, minding always to let the Ground you ſow be more in the *Shade*, as the Seaſon is more hot I have ſown ſome *Seeds* of the *Spaniſh Radiſh* in *Auguſt*, that have been fit to draw, juſt as the *Winter* began, and have continued good 'till the *February* following: But to have a Crop to ſucceed thoſe, it is common to ſow ſome at *Michaelmas*, that they may be above Ground in their *Seed-Leaf* only before *Winter*, and thoſe will be in Seaſon about *March*, if they have had the Shelter of ſome warm Wall.

SECT. VII.

Of HORSE-RADISH.

THE next *Root* I have to treat of is the *Horſe-Radiſh*, which no *Kitchen-Garden* ought to be without. I have known ſome *Gardeners* plant Roots of it on a piece of Ground three or four Inches deep, and then letting it ſtand three Years, have taken it up for Market: But a much quicker and better way has been experienc'd by a Friend of mine for the propagating this *Root*, which was in this manner: Dig a Trench in ſome remote Corner of the *Garden*, about three or four Foot wide, and about ſixteen or eighteen Inches deep; the Soil, if poſſible, ſhould more incline to Sand than Clay; and at *Michaelmas*, which is the beſt time for this Work, cut ſome *Horſe-Radiſh Roots* in

enough to take up ; they will then
well grown, and without Knots,

SECT. VIII.

Of POTATOES.

P*Otatoes* and *Jeruſalem-Arti*
Roots of leſs note than any
mentioned ; but as they are not w
Admirers, ſo I ſhall not paſs by t
of their *Culture* in ſilence. Th
rather loves a ſandy than a ſtrong
I have ſeen them do well in both
obſerv'd, that the Roots knot m
and are ſweeter taſted in the S
ſmaller Roots or Knots of them ar
ly ſaved to raiſe a Crop from, and
four or five Inches deep in the

hanging on the Strings or Fibers of one Plant.

The *Jeruſalem-Artichoke* affords a *Root* as large as an ordinary *Turnip*, which in its Taſte differs from the *Potatoe*, it being more watery and flaſhy: It is one of thoſe *Plants* which can hardly be got out of the Ground it is planted in, and delights chiefly in a ſtiff Soil, where I have moſt commonly ſeen it growing; every little part of the *Root* will grow if they are planted in the Spring like the *Potatoe*, and about the *Michaelmas* following will be fit for Uſe.

SECT. IX.

Of the ONION.

I Now come to treat of the *Onion*, a *Root* more generally uſed in the *Kitchen* than any other: Of this there are two Kinds worth the *Gardeners* Care; the firſt is the *Spaniſh Onion*, which affords a large ſweet-taſted Root; and the other the *Strasbourg Onion*, which is more biting, and laſts good much longer than the former; but the difference of theſe two Kinds make no Alteration in the Culture of them; they ſhould both be ſown early in *March*, in rich Garden Soil, and hough'd about the latter End of *April* with a very ſmall Hough, leaving about three Inches between the *Plants*, 'till they

the firſt *Seeds* have fail'd ;
than too few ; the Ground
too great a Burden, ſooner
with it. When the *Leaves*
their Colour, the *Roots* wil
that Year, and then they m
in dry Weather, and laid in
the Sun, 'till they are dried
be without Doors: After wl
get at them, but ſpread them
a *Green-Houſe*, or ſuch cove
more thorowly for laying
Some of this Store may perh
'till towards *April*, if they
at gathering, and kept ſo af
it will be impoſſible, wit
Care, to keep many of them
in the Houſe; and of thoſ
to *ſpire* about the beginni

Veſſels begin to open, cut them off and ſpread them on a *Mat* in the *Sun* to ripen, turning them every Day for a Fortnight or three Weeks before they will be fit to be beaten out of their Husks : Take ſpecial Care no Wet get at them, for they will ſprout with the leaſt Moiſture, and never afterwards be fit to ſow. It is a certain Rule, That if any *Seed* has had Moiſture enough to put forth its *Radicle* never ſo little, and is after that check'd before the *Ear-leaves* appear, it cannot by any means be made to grow afterwards.

The beginning of *Auguſt* we muſt ſow a freſh Crop in ſome warm place to ſtand the *Winter*, and ſupply the *Kitchen* when the dry'd *Onions* are gone. This Sowing will be fit to draw in *April*, and furniſh a Supply 'till the Spring Crop comes in.

SECT. X.

Of the LEEK.

THE *Leek* is ſown in *March* in a well-wrought Ground, and ſhould be hough'd like the *Onions*, and kept free from *Weeds*. In *July*, about the middle of the Month, plant them out in Lines about five Inches a-part in very rich light Soil, but chuſe wet Weather if poſſible, which will contribute to make them very large ; for one

Of GARLICK.

GArlick is propagated from *Clove*. *Root* planted early in *March*, five inches a-part, the Soil light and for. ſtiff Ground makes the *Roots*' The *Blade* will begin to turn Yellow i and then take them up in a dry Da tie them in Bunches for Uſe. This other Roots that are to be kept the muſt be very well dry'd, or they will

SECT. XII.

Of ESCHALOTS.

ESchalots, or *Shallots*, are of ſu in *Cookery*, that a *Kitchen-* ought not to be without 'em: A ligh Soil is the moſt agreeable to them, w their Blade turns Yellow; which will not be till the latter end of *June*, or beginning of *July*, if they like the Ground; then let them be well dry'd and laid up for Uſe. *N. B.* About a Rod ſquare of Ground, planted with theſe *Roots*, will be enough for the Uſe of any Family.

SECT. XIII.

Of CHIVES *and the* ROCAMBOLE.

CHives ſhould always be found in the *Kitchen-Garden*; they are frequently uſed in the *Winter* in *Sallets*, when young *Onions* are ſcarce. The *Off-ſets* of their *Roots* ſhould be planted at ſix Inches diſtance in *March*, cutting off their Blades at the ſame time; they love a light rich Ground and Shade: Thus order'd, they will be fit for Uſe at any time of the Year; and the oftener they are cut, the ſmaller will be their Graſs: About one Rod ſquare of them will ſerve a large Family.

The *Rocambole*, for its high Reliſh in *Sauces*, has been greatly eſteem'd formerly, but now-a-days is hardly to be met with; I think however it ſhould not be wanting in a compleat *Kitchen-Garden*; for conſidering how ſmall a quantity of it is ſufficient to give us that Reliſh which many *Onions* can hardly give, it ought to be preferr'd. The without any mixture of Dung.

CHAP. IV.

Of ASPARAGUS, ARTI
COLLY-FLOWERS, CA
and others of the Cole Race.

THE *Aſparagus* is one
Dainties of the Spring,
I account to be part o
neceſſary Furniture of
it brings great Profit to the *Gar*
London, either propagated upon n
(as they are call'd) or when they
with Dung in the *Winter*. I have
a *Gardener* about *Weſtminſter* h
above thirty Pounds in one Week
Aſparagus.

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Part

ſow the whole Piece with *Onio*
it over as level as poſſible, for th
not be of any Uſe 'till after
when the *Onions* will be off, an
the *Aſparagus Plants* have made
muſt be cut down; then dig u
and throw part of their Soil upo
to raiſe the Earth about five o
above the Buds of the *Plants*, ſu
Alleys at the ſame time with Dun
rich Soil.

In this State let the *Beds* r
March following, and then rake
Earth. I have known ſome Ga
Beans about *November*, in the *Aſ*
leys, cloſe under the Sides of the B
may beſt ſhelter them from the *E*

The *Alleys* muſt be turn'd up i
ner every *Winter*, and now an
rich'd with Dung; but we muſt
let *Michaelmas* be paſs'd before we
the Haulm of the Aſ

A *Bed* thus prepared will laſt good about a Month, ſhooting freſh Buds every Day, if the ſevere Weather does not hinder: As it begins to cool ſome warm Horſe-Litter ſhould be laid upon the Glaſſes every Night, which will contribute as much to make the Buds ſhoot, as if they were to have new Dung put under their Roots. The time for this Work is from *November* 'till *April*, when the natural Crop comes in, making freſh Beds every Month to follow one another, and give us a conſtant Supply.

But to plant *Aſparagus* for a *Natural Crop*, we muſt proceed in a very different way. About the beginning of *March* (which is the beſt time for tranſplanting of *Aſparagus*) meaſure out your Ground, allowing four Foot for the Breadth of each *Bed*, and two Foot for every *Alley* between the *Beds*; open a Trench at one End of it, and lay into the bottom of the Trench about the Thickneſs of ſix or eight Inches of Horſe-Dung well rotted: Go on then to trench the ſame quantity of Ground, lying next to the firſt Trench, throwing the Earth which comes out of the ſecond Trench upon the Dung laid in the bottom of the firſt. Continue to work in like manner till the whole Piece is compleated and levell'd; then in Lines, at eight or ten Inches diſtance, plant the *Aſparagus* taken freſh out of the *Nurſery*, ſpreading

their

WE may either propagat
choke from *Seed* or
the latter is moſt commonly pra
ever let us uſe either way of r
we muſt be ſure to allow them
Ground, with Dung mellow'd
expos'd to the Sun : About the
March we may ſow the *Seeds* to
out the following *Month*; and th
March is the moſt proper Seaſon
Roots, either for new Plantati
make good the Deficiencies of th
which ſeldom paſs a *Winter* wi
Loſs, notwithſtanding the greate
been taken to preſerve them.
take off the *Slips*, we muſt lea
upon every old Root (if it be ſtr

the thriving of the *Plants*. This young Plantation muſt be well water'd after planting, and perhaps may afford us ſome good Flowers about *September*, tho' for the ſake of the Plants it is to be wiſh'd they would not; for when they bloſſom the firſt Year, the Roots are endanger'd, therefore ſome *Gardeners* break off the Bloſſoms as ſoon as they begin to appear, and about the middle of *July* break off the Stems of the old Roots that have done blowing, that they may furniſh themſelves with freſh Shoots to ſtand the *Winter*.

SECT. III.

Of the COLLY-FLOWER.

WHoever is minded to propagate this *Plant* muſt chiefly have regard to the Goodneſs of the *Seed*, which ought to be ſaved only from ſuch *Flowers* as were large and white, for otherwiſe there can be no hope of Succeſs; and in the next place the Ground muſt be very rich, and not over dry. Being thus provided, we may begin to ſow the *Seeds* in *March*, in ſome well-expos'd Corner of the *Garden*, where the young *Plants* may be ſhelter'd at their firſt coming up from the froſty Evenings. About the middle of *April*, when they are in their firſt *Leaf*, they muſt be planted in a *Nurſery*, about five or ſix Inches a-part, and ſtand

a-part, and water them very well
ately before you plant the *Colly-Fl*
them, which will contribute to k
Plants freſh and green, 'till their R
gin to ſhoot; by this means, and
Waterings when the Seaſon is dry,
expect large Flowers in Autumn,
cially if the *Alleys* between the *Pl*
floated with Water, which will
them much more than common W
Some of this Plantation will not
flower 'till after *Michaelmas*, and t
Plants muſt be taken up with the
their Roots, and ſet together (up
a *Green-Houſe*, or ſome other ſuch
where the Bloſſoms will enlarge th
and be fit for Uſe in the *Winter*: S
if we have any *Artichokes* at that t
cut, take them with all their Stal

upon ſome decay'd *Hot Bed*, and tranſplant them about three Inches diſtance, as ſoon as they have made their firſt *Leaf*, upon ſome other well prepared *Bed:* The middle of *September* draw out every other *Plant* from that Plantation, and ſet them four or five Inches a-part, either under a *South*-Wall, to ſtand there 'till Spring, when they are to be planted out for Flowering, or elſe ſet them in the places where they are to bloſſom, and cover them with *Glaſs-Bells* in the Severity of the *Winter*; and this laſt Method I think to be the beſt, becauſe they will be well rooted in the Spring, and conſequently be better able to make large Bloſſoms than thoſe that are planted in the Spring, and have the Difficulty of making new Roots when the others are growing.

Thoſe *Colly-Flowers* that are planted out at *Michaelmas*, will Flower about three Weeks ſooner than thoſe that are planted in the Spring; however it is neceſſary to make Plantations in both Seaſons, that they may not all bloſſom at one time, but gradually ſucceed one another. An underſtanding *Gardener* will alſo make his Spring Plantation of *Colly-Flowers* at ſeveral times, allowing three Weeks or a Month between each; and by that means (altho' all the Plants were rais'd at one time) the checking them at different Periods of Growth, will make them bloſſom earlier or later by two or three Months.

muſt alſo be obſerv'd that
enough, for they are grea
When the Bloſſoms begin
ſome of the great Leaves an
to keep the *Flowers* from
ſcorching Heat of the *Su*
make them turn Yellow.

In *March* and *April* take ca
from the Winds, which
damage them, and ſometime
by the Roots: I would adv
have a good kind of *Colly-F*
ſoms early, and has large an
to let ſome of the forward
Seed, carefully tying them
the Winds may not injure t
Seed-Veſſels are full grown,
within them are perfected, c
Stalk, and let it dry in the

SECT. IV.

Of CABBAGES, *and their Kinds.*

WE have ſeveral Kinds of *Cabbages*, the large *White Cabbage*, of which the *Gardeners* at *Baterſea* in *Surrey* have a Kind that comes very early, and is the beſt for *Summer* Uſe: If it be ſown in *July*, and ſtands the *Winter*, I have known ſome of them ripen in *May*; or elſe, if we are minded to have of them ripe in the *Winter*, ſow them in *March*, and plant them out in *July* at two Foot diſtance, watering the Ground well before Planting, if the Weather be dry. In the ſame manner alſo muſt be ſown and planted the *Savoy-Cabbages*, or *Savoys* (as they are call'd) for *Winter* Uſe, for they are not good 'till the Froſts have pinch'd them: Theſe and all other kinds of *Cabbages*, will put forth Sprouts from the Stalks, that towards the Spring are even preferable to the *Cabbages* themſelves, and will continue ſo to do 'till the middle of *April*, about which time Greens of this kind are very ſcarce, and therefore young *Cabbage-Plants* and *Coleworts* that were ſown in *July* or *Auguſt*, are then the only Greens, except *Spinage*, that we have recourſe to.

above it, and then make up
round about the *Cabbage* it f
of it be ſeen but the Top
the Flower-Stems will beg
March or *April*, and then
up as the *Colly-Flowers* : T
it is full grown, muſt be
order'd like that of the *Coll*

CHAP. V.

Of LEGUMES *or* PULSE; *ſuch as* BEANS, PEASE, KIDNEY-BEANS, *&c.*

SUCH as deſign to propagate *Beans* or *Peaſe*, muſt have a large parcel of Ground; for 'tis not a ſmall Quantity will ſuffice to furniſh a very moderate Proportion of them; more eſpecially becauſe they ſhould be ſown at indifferent Seaſons: That from the time they firſt come in, to the beginning of *Winter*, we may always have a freſh Supply of young ones, as the former Crops decay.

SECT. I.

Of BEANS.

THE *Bean* has many Varieties; two Kinds of which I ſhall only make mention of, *viz.* The *Spaniſh Bean* for an early Crop, and the broad *Windſor Bean* for the *Summer:* The firſt of theſe are commonly put into the Ground in *November* or

are above Grou
takes them, the Wall will, w
warm'd by the *Sun*, tha
Ground where they ſtand,
on, and then they freeze a
the *Froſt* laſts any time, th
ly haraſs'd in this manner,
'till they are deſtroy'd. I
trary, a Hedge ſhelters the
Winds, and not reflectin
them in the Day, as a Wall
remain in the ſame frozen S
ral *Thaw* releaſes them, wit
ſuch violent Fits of Alterati
certainly impair their Parts.

If we have double Lin
ward *Beans*, let not the Ro
gether than two Foot, for
ſmother each other when
grow up, and then by ru

cut off the Top of every *Bean-ſtalk*, to make them ſet their *Fruit* the better.

About *February* we may ſet a ſecond Parcel of Ground with *Spaniſh Beans*, to come in after the former; and in *March*, plant ſome *Windſor Beans* for the firſt time, for they are tender, and cannot bear the *Froſts*. I have been told by Mr. *Furber* of *Kenſington*, who I have had occaſion to mention before for his Ingenuity, that if we ſet the Rows about a Foot aſſunder, ſuffering them to grow 'till they are almoſt ready to bloſſom, and then cut down every other Line within two or three Inches of the Ground, we ſhall then have a double Crop of *Beans* from the ſame Sowing, one coming in about *July*; and that which was cut down, ſpringing afterwards afreſh from the Roots, will have *Beans* about *Michaelmas*: 'Tis therefore I would adviſe, that if it ſhould happen that two Crops of *Beans*, ſown at different Seaſons, ſhould by Accident tend to bloſſom at the ſame time, as they often do, cut down one of them to have a late Crop.

'Tis alſo neceſſary to ſet *Beans* in *April* and *May* in moiſt places, and then they muſt be allow'd a greater diſtance between each other than thoſe that were planted forwarder in the Spring; but above all, keep them clear of Weeds; and I think it would be good Husbandry to water them about the time of their Bloſſom, if the Seaſon be dry, then thraſh'd out for Uſe.

SECT. II.

Of PEASE.

THE Kinds of *Peaſe* v
mention, are the *Hotſ*
ter Sowing, the *Dwarfs*, a
cival, or *Dutch Admiral*, to t
Spring; theſe Sorts may wel
fice for any *Garden*, without
at leaſt fifty other Kinds that
of, which perhaps are ſo near a
that the difference can hardly be
but in the Names only. I hav
der'd at the Indiſcretion of
who take a Delight in giving c
to Plants, and make it their Buſ

ſubject to, I ſhall proceed to lay down what I have obſerv'd relating to the Culture of *Peaſe* in a *Garden.*

It is not one of the leaſt Perfections of a good *Gardener*, if he has Ground enough, to provide ſo many Crops of *Peaſe* every Year, as may furniſh a Table throughout the whole *Summer:* About *November* or *December* is ſoon enough to ſow the firſt Crop; for if they were put into the Ground ſooner than thoſe Months, they would be endanger'd by the Froſts: Some of the *Hotſpurs* are the moſt proper for that Seaſon to be ſown in *Drills*, each *Drill* about two Foot from the other, the Lines running from *North* to *South.* When they have ſhot about ſix Inches high, Earth them up about four Inches on both Sides of the Lines, raiſing a little Bank on the *Eaſt* Sides of them, to defend them from the *Blaſts* which accompany the *Eaſt Winds.*

In *February* a ſecond Crop of the ſame kind of *Pea* ſhould be ſown, and in *March* we may put in a third of the ſame Sort. About the beginning of *April* ſome Ground may be prepared for ſowing ſome of the *Dwarf Peaſe*, eſpecially the very ſhort Kind, which ſeldom riſes higher than half a Foot, or covers more Ground than ſix or ſeven Inches ſquare; and notwithſtanding the ſmallneſs of this *Plant*, it will yield near as many *Peaſe* as one of the largeſt Kinds,

and

a-part, for then there will go between them 'till they to be pull'd up.

Beſides this ſmall Sort, kind of *Dwarf Pea*, which high, a very good Bearer, This Sort may be ſown t former, becauſe they ca more upright; but the Lin Foot a-part. In *April* the or in *May* or *June*, as wel to have a conſtant ſupply following one another: The have ſown in Edgings, and great Quantities from then them much the beſt for *H* covet *Peaſe* in the *Winter*, but little room, and afford Crop: I am aſſured one *Be*

Egg Pea, which is alſo called the *Dutch Admiral*; this is the moſt rampant of all the *Pea* Kind, and therefore requires more room than the others; ſow them about two or three Inches a-part in Lines, planting two Rows within eighteen Inches of one another, and then leave a ſpace of two Foot and half, for an Alley to paſs through when they are fit to be gather'd: Having allow'd this Paſſage, plant two Lines more, eighteen Inches a-part, and ſo continue to do, allowing the breadth of two Foot and half for each Alley, 'till the whole Piece is ſown. When they are grown about ſix Inches high, Earth them up like the others, and ſet one row of Sticks or Boughs, about ſix Foot high, between each double Line of *Peaſe* for them to run up, and they will bear plentifully; which they never will do if they are ſet too cloſe together, or are not ſtaked up.

SECT. III.

Of the KIDNEY-BEAN, *or* FRENCH BEAN.

WE have two Sorts of *Kidney-Beans* common in our *Gardens*; the one which bears early near the Root, without running high, call'd the *Baterſea-Bean*, and another Kind, which is more rampant, growing near ſix Foot high, if it is ſtak'd up.

Beſides theſe, I have ſeen above fifty other ſorts that have been brought from foreign Parts, but ſeldom produce any quantity of Fruit in our Climate.

We ſow *Kidney-Beans* the firſt Week in *April*, in a light freſh Soil, making *Drills* from *North* to *South*, laying the *Beans* in them about four Inches a-part, and covering them with Earth, rais'd in a Ridge to keep the Wet from them; for if the Ground be over-moiſt it rots them.

The Lines of the *Baterſea-Bean* ſhould be two Foot a-part, and the other Kind ſhould be ſown after the ſame manner as I have preſcrib'd for the *Roncival Peaſe*, *i. e.* in double Rows and Alleys between them, two Foot and half wide. The *Baterſea* Kind need not be ſtaked, but the others will not bear well without they are ſtaked. From the firſt Sowing in *April*, we may once every three Weeks, till the middle of *July*, continue to ſow freſh Parcels of Ground with *Kidney-Beans*, to ſucceed one another 'till the *Winter* comes in.

We muſt obſerve, that when the Ground is very dry, as in *June* and *July*, and the Weather likely to be hot, we muſt water the *Drills* as ſoon as we have open'd them, before we put in the Seed, which will contribute to make them ſprout; but we muſt avoid watering them after they are ſown, leaſt we rot them.

Out of Curioſity I have known ſome of the *Baterſea* Kind of *Kidney-Bean* ſown in *Hot Beds*, five Inches a-part, about the firſt Week in *September*, and they have had *Beans* fit to gather about *January*; but theſe, as well as other *Plants* of this Nature, when they are forc'd, muſt have all the Air that can poſſibly be allow'd them, or the *Plants* will be apt to decay.

The *Wing Pea*, when it is very young, is by ſome dreſs'd and eaten like *Kidney-Beans*, but in my Opinion are not near ſo good; the *Bloſſoms* indeed are of a beautiful Colour, and make a good Show in a *Garden*, if they are ſet in Edgings; it grows in any Soil without difficulty, if we put in the Seeds in *April*.

CHAP. VI.

Of SALLETS, *their* Culture.

AS the different Humours of Mankind will not allow me to preſcribe any certain Mixture of Herbs as the moſt pleaſant to the Palate, ſo I ſhall content my ſelf with giving my Reader only ſome general Hints relating to the ſeveral ſorts of common

Sallet-Herbs, and leave every one to pleaſe himſelf in the Mixture of them.

I would have the Reliſh of the ſeveral Herbs conſider'd, as for Example, which are moſt hot and biting; as *Creſſes*, *Muſtard*, *Sellery*, *Taragon*, *Chervil*, *&c.* and the more cool and inſipid to the Taſte, as *Turneps*, *Rape*, *Spinage*, *Corn-Sallet*, *Letuce*, *Purſlane*, and ſuch like; by this Knowledge a *Gardener*, when he compoſes a *Sallet*, will ſo judiciouſly mix his Herbs, that the too ſtrong Taſte of one Kind may not overpower all the reſt, and diſcreetly make uſe of the inſipid Sorts to qualifie the Pungency and Heat of the others, as the Seaſon of the Year is more hot or cold; ſo that every *Sallet* we eat, may not only be agreeable to the Taſte, but alſo a ſort of Phyſick to the Body.

SECT. I.

Of SMALL HERBS.

WHAT the *Gardeners* call *Small Herbs* in *Sallets*, are ſuch as ſhould be always cut while they are in the *Seed-Leaf*; ſuch are *Creſſes*, *Muſtard*, *Radiſh*, *Turnep*, *Rape*, *Spinage* and *Letuce*; all theſe are commonly known to *Gardeners*, and are generally raiſed by them from the Seeds ſown in *Drills* or *Lines*, about a Yard in length, in ſuch an Expoſure as the Seaſon of the Year requires; that is, from *Mid-February* to the end of *March*, under Glaſſes and Frames; and from that time to the middle of *May*, upon natural Beds of Earth, warmly expos'd; and afterwards, as long as the Summer Heats remain, in more ſhady places. About the middle of *September* and *October* make your *Sallet-Beds*, as I have advis'd in *February* and *March*; and then as froſty Weather begins to come in, prepare moderate *Hot Beds* to ſow your *Sallets* upon, to be continu'd during the *Winter* Months; theſe ſhould have as much Air as poſſible, as well to give them Colour, as to help their Taſte. It ſometimes happens, when the Froſt is very violent, that the *Small Herbs* are frozen, notwithſtanding the greateſt care; but I am told, that putting them into Spring-Water for two Hours before they are uſed, will recover them. I likewiſe find it is the beſt way to draw the *Small Herbs* up by the Roots, from the *Hot Beds*; for if the Roots are left in the Earth, when you ſow a ſecond Crop of *Salleting* upon the ſame *Bed*, it will not proſper. Alſo it ſhou'd be obſerv'd in ſowing the ſecond Crop, that Seeds of the ſame Kind ſhould not be ſown in the ſame Place, but eaſe the Ground with varying its Burden, putting the *Seeds* of hot *Herbs* where the cool ones grew before; and this ought always to be obſerved in the

Culture of every *Plant*, that we do not place them immediately upon that Spot where the ſame Kinds have juſt been growing. The moſt skilful *Farmers* and *Gardeners* obſerve this Rule with that Exactneſs, that it ſeems as if one kind of *Plant* meliorated and prepared the Ground for the Reception of another.

For the greater Perfection of our *Winter Sallets*, it would be well to ſow ſome Lines of *Creſſes* in the natural Ground about the middle of *Auguſt*; for they will reſiſt the Froſts of the *Winter*, and help greatly to enrich our *Hot-Bed Sallets* with the high Taſte they acquire, by being expos'd in the open Air. Likewiſe at the ſame time ſow a *Bed* of *Chervil* for *Winter* Uſe, as well to mix among our *Sallet-Herbs*, as to put in *Soops*, &c.

SECT. II.

Of SELLERY *and* ENDIVE.

OUR *Winter Sallets* are likewiſe greatly improv'd by blanch'd *Sellery*, which is a hot *Herb*, of a very rich Flavour; it is raiſed from Seed ſown in *March* and *April*, in light Earth, in ſome well-expos'd part of the *Garden*, and planted out, about ſix Weeks after it is come up, in Beds, allowing four Inches diſtance between the *Plants*; they may there remain 'till the middle of *June*, at which time ſome of the firſt Sowing will be fit to plant in Trenches for blanching. The Trenches muſt be cut by a Line, eight or ten Inches wide, and about the ſame depth, and as ſoon as they are made, put in your *Plants*, after having prun'd off the Tops and Roots of them: They muſt not ſtand nearer together than five Inches, if they are ſtrong; and as they grow large, Earth them up within four or five Inches of their Tops, and ſo continue to do at ſeveral times, 'till they are fit for Uſe. It is neceſſary to make three or four different Plantations of *Sellery* at ſeveral times, one to come later than the other; and we may note, that theſe *Plants* will not be white 'till ſix Weeks after they are Earth'd up; they love a light rich Soil.

Endive, when it is blanch'd, is much uſed about *London* in *Winter Sallets*; tho' in my Opinion, it is a Plant hardly worth our trouble, as it has neither Taſte or Flavour: It loves a light rich Soil, and ſhould be ſown about the latter end of *April*, leſt it run to Seed, as it is apt to do, if it is ſown too early in the Spring. When it has been come up about ſix Weeks, plant it in Beds as I have directed for the *Sellery*, and about the middle of *July* plant it in Rows, about ſix Inches a-part; and as ſoon as it is well grown, tie up ſome of it to whiten; and every Fortnight, as long as it laſts, tie up freſh Parcels of it.

SECT. III.

Of the CABBAGE-LETUCE.

WE have great Varieties of *Letuce*, many of which have been more eſteem'd for their Rarity than for their Goodneſs; but of all that I have yet try'd, I find none to exceed the good Qualities in the *Roman Letuce*, the *Dutch Brown Letuce*, and the *Imperial* and *Silecia* Kinds; all which ſorts Cabbage extreamly well, and are well taſted.

The *Brown Dutch Letuce*, if it be ſown about the middle of *Auguſt*, will be fit to tranſplant in *September*, to ſtand the *Winter*, either for Cabbaging early in the Spring, or to be cut for *Winter Sallet*; it loves a rich light Soil, and warm Expoſure, as do all of this Tribe, eſpecially if they are ſown towards the Autumn. The *Imperial* and *Silecia Letuces*, if they be ſown about the ſame time with the former, and planted out in warm places, will be very large, and be fit to cut very early in the Spring; but the *Roman Letuce* I have not known to bear the Froſts.

In *March* are commonly ſown all theſe Kinds in the open Ground among other Crops, as I have already hinted elſewhere: And that there may not want a conſtant Supply of them, ſow ſome every Month from *March*, 'till you put in the *Winter* Crop, and plant them out in Beds, about five Inches a-part, three Weeks after they come up; for tranſplanting them contributes to make them Cabbage.

Such as produce large *Cabbages* early in the Spring, may be ſuffer'd to ſtand for Seed, and ſhould be ſtalk'd up leſt the Winds anoy them; but the *Imperial* Kind will hardly run to Seed if the Crown of its *Cabbage* be not cut croſs-ways, and carefully open'd to give way for the *Flower-Stem* to ſhoot; and then likewiſe the *Plant* will be in danger of rotting, if it ſhould rain; therefore fix a *Glaſs Bell* over it: The *Seeds* will be fit to gather as ſoon as they begin to ſhew their *Down*, and then pull up the *Plants*, and ſet them to dry in a *Green-Houſe*, 'till you find the *Seed* is fit to be thraſh'd out.

It is obſervable, that tho' the *Plants* we ſave the *Seeds* from, were of extraordinary good Kinds, yet thoſe *Seeds* will degenerate from the *Mother Plant*, if they are cultivated in the ſame *Garden* where they were ſaved: Therefore if you can poſſibly meet with an honeſt Correſpondent, who gathers yearly the *Seeds* of ſuch *Plants* as you have occaſion for, change with him every Year, and you will both find your Advantage by ſo doing.

SECT. IV.

Of BURNET, CORN-SALLET, PURSLANE, SORREL, SPINAGE *and* TARAGON.

THE Contents of this *Section* will be of the *Culture* of certain *Herbs*, which are often uſed in *Sallets*, and ſerve as Additionals to thoſe I have before mention'd. *Burnet* is a cool *Herb*, a perennial *Plant*, whoſe tender *Leaves* being mix'd with other *Sallet-Herbs* in the *Winter*, gives us the agreeable Flavour of *Cucumbers*: It is propagated by Seeds ſown in *March*, and may likewiſe be encreaſed at that time by parting the Roots.

Corn-Sallet is raiſed from Seeds ſown any time of the Year, and makes a very good Sallet Furniture in the *Winter*.

Purſlane is an inſipid Herb to the Taſte, but very cooling, and is admir'd by ſome People in Summer Sallets: We have two ſorts of it, the *Golden Puſlane* and the *Green* ſort, which are both rais'd from Seeds ſown in ſome warm place in *April*, or may be ſown earlier if they have the help of *Glaſſes*.

Sorrel is alſo uſed in *Sallets*, eſpecially in the Spring the young Leaves are very agreeable; it is raiſed from Seeds ſown in *March*, commonly in Rows or Drills.

Spinage I have already mention'd to be one of the neceſſary Ingredients in raw Sallets, to be cut in the *Ear-Leaf*; but it is of far greater Uſe for boil'd Sallets in *Winter* and the Spring. The beginning of *Auguſt* it ſhould be ſown in ſome place well expos'd to the Sun, that the *Leaves* may be large enough to cut for boiling in the *Winter*; and in *March*, *April* and *May*, we muſt not fail to ſow ſeveral parcels of Ground with it at different times, about a Fortnight diſtant from one another, to ſupply the Table conſtantly 'till other Greens are plenty; for in the Spring one Crop will hardly laſt good longer than a Fortnight without running up to Seed. We have two Kinds of it, the *prickly* Sort, and the *round Spinage*, differing in the Shape of their Seeds according to their Names, but I find no difference in their Taſte when they are boil'd.

Taragon, of all other Herbs, ſhould not be wanting in a *Sallet*, as it is a Cordial Herb, tho' the Taſte of it may not perhaps be ſo grateful to the Palate at firſt as the common Herbs: For my own part, I think it pleaſant, if there is not too much of it; a few Leaves, or three or four of the tender Tops, are enough to give a Sallet an agreeable Reliſh. This *Plant* loves a warm Expoſure, and is propagated from Slips taken from the Root and planted in *March*.

Thyme and *Hyſſop* are either raiſed from Seeds ſown in *March* or *April*, or propagated from Slips planted in thoſe Months: We have many ſorts of *Thyme* of various Scents and Uſes; the *Pot Thyme*, *Lemon Thyme*, and a Sort with varigated Leaves are moſt commonly cultivated, and make very good Edgings that will laſt ſeven or eight Years: And beſide them the *Maſtick Thyme*, and the *Marum Syriacum* or *Cat Thyme*, are cultivated in many *Gardens* for the ſake of their refreſhing Odour; but the latter, if it is in ſmall Quantities, muſt be carefully defended from the *Cats*, who love to eat it, and are intoxicated with it; but I obſerve, where it is in abundance the *Cats* never diſturb it. Theſe two laſt Kinds ſhould be planted in the warmeſt parts of the *Garden*, the others will grow any where.

Sage has many Varieties, but we propagate only three ſorts of it, *viz.* The *Red Sage*, the *Tea Sage*, or *Sage of Virtue*, and the *Wormwood Sage*; theſe Kinds are raiſed from Slips taken from the Roots about the beginning of *April*, and planted a Foot a-part in light Earth. The *Sage* of *Virtue* ſhould be cut for drying when it is full of young Shoots, for thoſe only are fit to make *Tea* of; they ſhould be gathered in a dry Day about Noon, and laid to dry in the Shade to be preſerv'd for Uſe. I have been often told, that the *Wormwood Sage* is preferable to the former, affording a pleaſanter Liquor, and more grateful to the Stomach.

We ſeldom meet with more than two ſorts of *Rhue* in our *Engliſh Gardens*, and their difference only conſiſts in the Colours of their Leaves; the one being variegated with Cream Colour, and the other of a plain Green: This *Plant* delights in ſhady Places, and is eaſily multiply'd by Slips ſet in *April* in a light Soil. In times of Peſtilence this *Plant* has been much in requeſt, believing it prevents Infection.

Mint, or *Menth*, and *Baum*, ſhould neither of them be wanting in a *Kitchen Garden*; they are propagated by parting their Roots any time in the Spring, and will grow any where. *Mint* indeed is more generally cultivated than the other, as it is of it ſelf a pleaſant Sallet, and good in Soops and ſome Sauces, beſides its extraordinary Uſe in *Stilling:* When it is about a Foot high, it ſhould be cut to dry in Bunches for *Winter* Uſe, obſerving this as a general Rule, to cut every *Herb* deſign'd for drying in a dry Day, and then to dry them in the Shade.

Some *Gardeners* think it worth their while to plant ſome large Roots of *Mint* in the Corners of their *Hot Beds* about *November*, that they may have young Shoots of it to mix among their *Winter Sallets*.

Tanſie is increas'd by parting the Roots in the Spring, and is a *Plant* ſo valuable, that it muſt not be wanting; ſome of it ſhould always be kept dry in the *Winter*, eſpecially for the Uſe of thoſe who are afflicted with the *Gout* in their Stomach: It is of that ſoveraign Efficacy in that Caſe, as I have found by Experience, that I think I ſhould be guilty of ill Nature, if I was to paſs by this Opportunity of making known the Method of uſing it. Boil Half a handful of this *Herb* in half a Pint of ſtrong *White-Wine*, and drinking this Decoction as hot as poſſible; I have always found it to remove the Pain in leſs than a Quarter of an Hour.

Wormwood is either raiſed from Seeds or Slips planted in *March*; it will grow in any Soil, and be apt to over-run the Ground, if it be eaten by Hogs when the Seeds are ripe, which paſſing through their Bodies germinate and come up very quickly.

Penny-royal and *Cammomile* are uſeful *Herbs*, and very well deſerve Place in the *Garden*; they delight in moiſt ſhady Places, and proſper beſt in a ſtiff Soil; they are both propagated from Slips planted in *March* or *April.*

We have two Kinds of *Marjoran* commonly propagated in *Gardens*; one Sort called the *Winter Sweet-Marjoran*, which will reſiſt our Froſts, and remain good two or three Years without renewing, and the other is ſown annually upon the *Hot Bed* in *March*, not being able to defend it ſelf from the Violence of our Winters: The firſt Kind is increas'd by planting the Slips about *March* or *April* in moiſt Places, but has not that agreeable Scent which we find in the other; therefore ſome of the laſt Sort ſhould be dry'd every Year when it is grown pretty large.

Carduus is rais'd from Seeds ſown either the middle of *Auguſt*, or in *March*; but I commend the Autumn *Plants* before thoſe rais'd in the Spring, as they are much larger, and more vigorous than the others, and beſides have a much better Seaſon to dry in.

Angelica is rais'd from Seeds ſown in *March* in a moiſt rich Ground; it is a *Plant* that laſts good for ſeveral Years without renewing, and is of great Uſe.

Dragons ought alſo to be found in our *Garden*, as well for the Beauty of the *Flowers*, as the Uſe made of the whole *Plant* in many Caſes; it is multiply'd by tranſplanting the Suckers taken from about the Root in *March*: This *Plant* loves a freſh natural Soil and Shade.

Fennel and *Dill* are both propagated alike from Seeds ſown in the Spring; they are uſeful *Herbs*, and ſhould not be wanting in a *Garden*; the firſt having its tender Stalks blanch'd like *Sellery* makes a very good Sallet.

Parſley and *Clary* are alſo very uſeful Furnitures of a *Kitchen Garden*, both cultivated with great Facility, and rais'd from Seeds ſown in *March*, and renewed every Year.

I have now (I think) mentioned every *Plant* that is requir'd to grow in a *Kitchen Garden*, and would adviſe, that the ſeveral Kinds I have treated of in this Chapter be planted in ſome place near the Houſe, for the Conveniency of gathering them with little trouble when they are wanted.

CHAP. VIII.

Of ENGINES *for raiſing of* WATER, *with ſome Obſervations and Experiments for the meliorating of* Water *for the Uſe of* Gardeners.

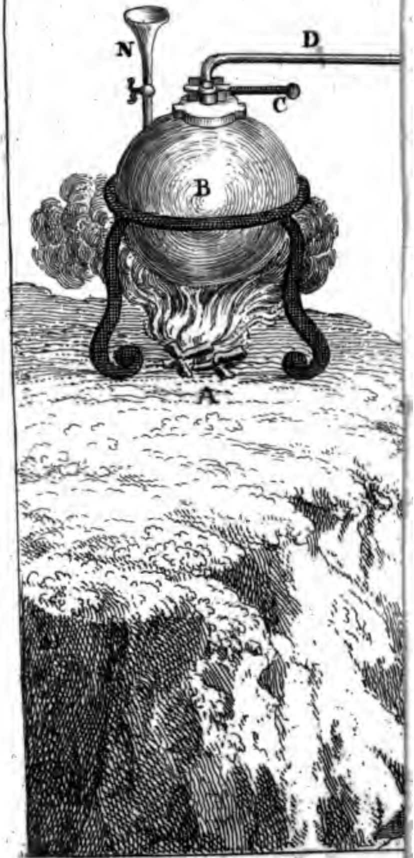
AS it is impoſſible to have either a fine or profitable *Garden* without the Command of good *Water*, I am perſwaded this Chapter will not be unacceptable to ſuch Gentlemen as have their *Gardens* unfortunately ſituated remote from it; but eſpecially if by the Aſſiſtance of ſome *Engines*, which I ſhall here mention, they may be taught how to bring it, with little Trouble, to their Houſes or Gardens, altho' they have their Station upon the tops of Hills, or other Places remote from *Water*.

Firſt,

P:175.

Plate II

Fig I



a little cold Wa- nſing the *Steam* r immediately to niſh E.

he *Steam* into E, and out of it up L into he Top to receive it. *team* at C as before, pace of a Second or two will be refill'd, which may d up L as before: So this continued as long as you keep Water in B.

n the Cock N, and then only out of it (without hot Water) muſt be repleniſh'd with freſh our *Boiler* of Water will laſt a

you have rais'd Water enough, and to leave off working the *Engine*, y all the *Fire* from under the *Boiler*, the Cock N to let out the *Steam*, could otherwiſe (was it to remain perhaps burſt the *Engine*.

Proportion of the ſeveral Parts of *gine*, as it now ſtands at *Cambden* th:

Pipe, from the Surface of the Wa- *ne-Tree* F, is ſixteen Foot, th it ſucks the Water (but to draw Water about twenty

N From

C The *Regulator*, which opens to let it into
D The *Steam-Pipe* (of Copper) thorow which it deſcends into
E The *Receiver*, which is a Veſſel of Copper; that at firſt ſetting at Work is full of Air, which the *Steam* will diſcharge thorow
F The *Engine-Tree*, and up the *Clack* at
K (The *Plug* of the ſaid *Clack*, to come at and repair the ſame if need be) and ſo the Air goes up
L The *Force-Pipe.*— After E is void of Air, which is to be found by its being hot all over, then ſtop the *Steam* at C, and throw a litlle cold Water on E, and the *ſucking Clack* will open at
I (Which is the *Plug* of the ſaid *Clack*) and fill E with Water, which will aſcend thorow
G The *Sucking-Pipe*, from
H The *Pond*, *Well*, or *River.*

This being done, proceed to raiſe your *Water*, viz.

Firſt, Turn C to let the *Steam* paſs from the *Boiler* into E, and it will force the *Water* therein thorow F by K, up L; which *Water* cannot deſcend, becauſe of the *Clack* at I. When E is thus emptied, which may eaſily be perceived by its being hot as before, turn C and confine your *Steam* in B; then open the *Cock* M, which will let a little cold Water into E, and that by condenſing the *Steam* in E, will cauſe the Water immediately to aſcend from H, and repleniſh E.

Then turn C to let the *Steam* into E, and it will force the Water out of it up L into a *Ciſtern* O, placed at the Top to receive it. Then confine your *Steam* at C as before, and turn M for the ſpace of a Second or two of Time, and E will be refill'd, which may be again diſcharged up L as before: So this Work may be continued as long as you pleaſe, if you keep Water in B.

If you turn the Cock N, and then only *Steam* comes out of it (without hot Water) the *Boiler* muſt be repleniſh'd with freſh Water; but our *Boiler* of Water will laſt a long while.

When you have rais'd Water enough, and you deſign to leave off working the *Engine*, take away all the *Fire* from under the *Boiler*, and open the Cock N to let out the *Steam*, which would otherwiſe (was it to remain confin'd) perhaps burſt the *Engine*.

The Proportion of the ſeveral Parts of this *Engine*, as it now ſtands at *Cambden Houſe*, is thus:

The *Pipe*, from the Surface of the Water to the *Engine-Tree* F, is ſixteen Foot, which is the length it ſucks the Water (but might be made to draw Water about twenty eight Foot.)

the *Sucking-Pipe* G, as of the *Forc*
is three Inches; and of the *Ste*
about an Inch.

The *Receiver* holds thirteen G
Water, and the *Boiler* three times t
tity.

When this *Engine* begins to w
may raiſe four of the *Receivers* fu
ter in one Minute, which is fifty
lons; and at that rate, in an H
may be flung up three thouſand
dred and twenty Gallons, which
eighty ſix Barrels: Or if there wer
ceivers, one to ſuck, while the
charged it ſelf, as has been pract
we might raiſe ſix thouſand tw
and forty Gallons in the ſame tim

The prime Coſt of ſuch an *Engi*
fifty Pounds; and the quantity o
quir'd for each Working is abo

Now if the quantity of Water, which is here ſaid to riſe in an Hour's time, may not be thought enough for the Uſe deſign'd, the ſame *Engine* may either be continu'd to work for four or five Hours, or another of a larger Extent might be ſet up. I have ſeen one with two *Receivers*, which held each of them a Barrel (*i. e.*) thirty ſix Gallons of Water, which would furniſh ſo great a Quantity, that even ſome tollerable large Fountains might be ſupply'd by it.

In the working this *Engine* we may obſerve two things which contribute to explain the Motion of the *Sap* in *Plants*; *Firſt*, We diſcover the violent Elaſticity of *Steam* or *Vapour*, when compreſs'd or crouded into a little room, as the *Steam* or *Vapour* riſing from the Roots of Plants into the fine *Tubes* or *Veſſels* in the Wood, has ſufficient force to *unroll* or *explain* them at their Extremities, and by that means to enlarge the Plant. 2*dly*, We may obſerve the Effect of cooling this *Steam*, it then *condenſes* or *thickens* into Water which I ſuppoſe it does in *Plants*, as ſoon as it reaches their extream Parts and meets the Cold, and then returns to the Root thro' other Paſſages big enough to receive it, by means of its own Weight.

The *Perſian-Wheel* is another *Engine* which will draw Water from any great Depth: It is much uſed in *Italy* and other Parts of *Europe*, for drawing Water out of deep *Wells* and *Mines.* This *Wheel* has a Chain of Buckets, which in the time of working are continually filling and emptying themſelves: Some of them going down while the others are coming up, the Chain being looſe like that upon the Wheel of a *Jack.* This I ſhould further explain, if it was not ſo generally known to every one that has been abroad.

As for other Inventions for the ſame purpoſe of raiſing Water, I ſhall refer my Reader to the *Engines* themſelves, that at *Windſor-Caſtle*, the Engine at *Hampton-Court*, but above all others that I have yet heard of for ingenious Contrivance, the *Engine* belonging to —— *Louder*, Eſq; of *Whitehaven*, which I am told is a conſiderable Improvement upon Mr. *Savary*'s Invention.

When by the Aſſiſtance of any of theſe, or other *Engines*, the Water is brought up to the Place deſign'd, it ſhould be expos'd to the Air as much as can be in a Pond, or other Receptacle of the like Nature, which is capable of containing a large Fund of Water, by which means it will be kept from fermenting ſo quickly as it would do in ſmall Quantities, confin'd in *Ciſterns* of *Lead* or *Wood*; and if it ſhould then happen that the Water is not palatable, or very fit for Houſhold Uſe, it may be remedied by ſome of the following Ways.

If it be muddy, or ill-taſted, the Water immediately falling from the Pipe of the *Engine* into the *Pond* or *Receiver*, ſhould firſt light upon a Bed of *Pebble-Stones*, three or four Foot thick; and the *Pond* or *Baſon* it is received into, after it is prepared to hold Water, ſhould be cover'd at the Bottom with the ſame kind of Stone. In that part of the *Pond* where the Pipes receive the Water for its Conveyance to the Houſe, ſhould be laid a Heap of the ſame Stones over the Mouth of the Pipe; and at convenient Diſtances in the Courſe of the Pipes from the *Pond* to the Houſe, ſhould be made two or three ſmall *Ciſterns*, ſunk a Yard in the Ground below the Pipe, fill'd with the ſame ſort of Pebbles, and this Method will purifie the Water to an extraordinary Fineneſs. The famous *Piſa* Water, ſo noted in *Italy*, is not without theſe Helps; but indeed it is obſervable, that the very Mountain it ſprings from produces thoſe *Olives* which make the ſweeteſt *Oil* in the World, which probably proceeds from the Nature of the Soil, as the Goodneſs of the Water alſo is partly owing to.

But for want of theſe Conveniencies, we may refine Water another way, as it is frequently practiſed in *Spain*: They filter it thro' ſeveral *Bells* or *Baſons*, made of a porous Stone of that Country, ſomewhat like thoſe dug about *Oxford*. Theſe *Baſons* are placed one over another, as in *Fig*. II.

Plate II. ſometimes five or ſix, to make the Water as fine as you deſire; but for want of theſe, I think we might uſe large Baſons of ſome ſort of Earthen-ware made in *England*, and baked without glazing, which will let the Water paſs as freely as the *Bells* of *Stone*.

If it is too harſh, ſoften it with *Chalk* and *Gravel*; but above all we muſt obſerve, that no Water-Fowl be ſuffer'd to come near it, nor any Weeds or Fiſh live in it; and alſo that it is not annoy'd by Leaves of Trees falling into it.

And theſe Directions, I think, are not contrary to Reaſon, if we conſider, that the beſt and the worſt Waters are only good or bad, according as they are filter'd thro' *Beds* of different kinds of Earth; all Waters certainly partaking of the Qualities of the Earths they paſs thorow, as it were by Infuſion: It would therefore be well to obſerve what Soils the beſt or moſt pleaſant taſted Springs run thorow, that others may be regulated by them: From ſuch Obſervations an ingenious Man might eaſily alter the Taſte and Quality of any Water according to his own Fancy.

But for the Uſe of *Gardens*, the moſt pleaſant clear Water is not to be prefer'd, nor ſuch as comes immediately from a cold Spring; neither ſhould it be harſh, but rather ſoft and muddy: A ſtagnating Water, that lies well expos'd to the Sun, ſeems to be the beſt for the Health of any Plant; or pure Rain Water, if it can be had without any Mixture; for all enriched or fatned Water, with Dungs or other forcing Ingredients, proves often fatal to Plants, if not rightly underſtood; and at the beſt can only contribute to make a Plant grow ſomething the quicker; and ſuch forcing of Nature always proves of ill Conſequence as well to Plants as to Animals, by ſhortning their Lives.

Indeed where we have to do only with annual *Plants*, it may be of ſervice to uſe ſometimes theſe Provocatives, the better to bring them to Perfection within the compaſs of our *Summer*; but then they muſt be apply'd conſiderately, and a right kind of Mixture prepar'd for each reſpective Sort of Plant: For we muſt not imagine, that one ſort of Mixture, however fatning it may be, will alike contribute to the Welfare of every ſort of Plant. I have experienc'd, that the black Water taken from a Dunghil will make a *Cabbage*, or any of that Race, proſper extreamly: But having uſed the ſame Water to other Plants that were aromatick, and whoſe Texture of Parts was more cloſe, ſuch as *Mirtles*, *Thyme*, and the like, it kill'd them very quickly; which ſhews that the *Gardeners* ought not to confide in the Richneſs of any one particular kind of

Water for the Welfare of every ſort of Plant, no more than a skilful Phyſician will preſcribe always the ſame Medicine for the Cure of all ſorts of Diſtempers.

But there is another thing to be conſider'd in the preparing of Waters for Plants, which as yet ſeems to be very little regarded; and that is, when we mix *Pidgeons*-Dung, or other ſuch like Ingredients in Waters, we muſt allow them due time to ferment before we uſe them, otherwiſe they will injure the Roots we water with them, and that will diſtemper the Plants, and it may be kill them, as we often find by Experience.

Mr. *Evelyn* very juſtly obſerves, ſpeaking of theſe Mixtures, that they ſhould not be uſed 'till they be ſufficiently ſweetned and purged from their over *Acrimony:* I have known many Plants deſtroy'd by the Uſe of unripe Mixtures, altho' the ſame Preparations, when they have been fully maturated, have done Wonders in forwarding the Growth of the ſame kinds of Plants: And again, the Proportions of every Ingredient ought to be as reaſonably conſider'd, and not to double our Quantities over haſtily, becauſe a moderate Proportion has already began to ſhew its good Effects; like ſome unthinking People, who believe that the more Phyſick they take, the more healthful they ſhall be, becauſe they have once been reliev'd from Sickneſs by a ſmall Doſe of it: But a few Obſervations to an ingenious Man, who loves a *Garden*, will ſoon bring him to rights in theſe Matters.

I find that for *Orange-Trees*, *Sheeps* or *Deers-Dung* ſteep'd in Water, about half a Buſhel to a Hogſhead, is of great Uſe, and may be fill'd up five or ſix times without renewing the Dung; but this Water muſt not be uſed 'till it has ſtood at leaſt three Days in the Sun for the firſt time, and about forty eight Hours for the others: And beſides, we muſt likewiſe be ſure to obſerve, that when we have once began to make uſe of it, it muſt conſtantly be continu'd, or the Trees will decline.

I confeſs I cannot from Experience direct any other prepar'd Water for the Welfare of any particular kind of Plant but the *Orange-Tree*; but ſo far as I can judge, thoſe Plants with the largeſt Veſſels, will beſt endure the fatteſt Waters: See the Mixtures I mention for forcing Vegetation in the Third Chapter of my Firſt Part of this Work, and infuſe them in Water for trial.

But to return to plain Water, which is the moſt natural to Plants, uſe only ſuch, if poſſible, as has ſtood in the Sun ſome Days to ſoften, either in *Ciſterns*, or Pits dug in the Ground, but I eſteem Pits to be the beſt; and even Water of this Kind ſhould not be unheedingly given to Plants. We ſhould conſider the moſt proper Seaſons of doing it, and the beſt Method of refreſhing Plants with it.

Firſt then, we ought to water all Plants in the Morning, in ſuch Seaſons when the Nights are froſty; and in the Evening in the warm Seaſons: The Reaſon of the firſt is, that too much Wet lying about the Roots of Plants, chills and pinches them ſo much, if it happens to freeze, that they often periſh; but if it be given in the Morning when there is likelihood of a warm Day, it gives the Plant ſuch Nouriſhment as they require from it, and is dried up before the Froſt of the Evening can have power over it; therefore Morning-Waterings ſhould be in *Auguſt*, *September* and *October*, *March*, *April*, and the firſt fifteen Days in *May*; and from that time to the middle of *Auguſt* chuſe the Evenings for the ſame Work, becauſe then the extream Heat of the Sun would over-heat the Water given in the Morning to the Plants, and ſcall'd their Roots, beſides drying it up too quick, before the Plants could receive due Nouriſhment from it: But we ſhould never uſe theſe Evening-Waterings after the Sun is down, without great Neceſſity.

But in either of theſe Waterings, we ſhould take care to water as near the Ground as can be, and not hold the *Watering-Pot* too high, for that would waſh the Earth from about the

Roots of the Plants, and contribute to make the Ground hard when the Sun comes to ſhine upon it, and ſo bind the Roots too much. Before you water, obſerve always that the Earth be open and looſe about the Roots; and above all, avoid as much as can be the wetting of the Leaves; for if the Froſt comes upon them before they dry, it pinches and rots them; and if the Sun ſhines hot upon 'em while they are wet, they will ſpot and change their Colour.

Beſides theſe Simple Waterings, *Colly-Flowers*, *Cucumbers*, and thoſe Plants which have large Veſſels, ſhould be floated, that is, the *Alleys* between the Rows ſhould be damm'd up at each End, and fill'd with Water; and one of theſe Floatings will do more good than ſix Waterings cloſe to their *Stems*; they feed and nouriſh the extream *Fibres*, which alone want this help, and put the Earth in that Condition, that the ſmalleſt Warmth of the Sun will evaporate that Steam from it, which I account to be ſo neceſſary to plump the Parenchimous Parts of the Leaves and Stalks.

It is a Rule to be obſerv'd in the watering of Plants, That while they are not growing they ſhould be kept as dry as poſſible, and at the time of their Growth they ſhould never want Water, giving them frequently a little at a time, and chiefly at the time they are in Bloſſom; for, if by accident of

Weather the Water lies long about the Roots of Plants, it chills them, and checks their Growth. It is alſo to be obſerv'd, that ſuch Plants as are very ſucculent or juicy, as *Houſe-leeks*, *&c.* muſt have little Water; they contain Moiſture enough in themſelves for their Nouriſhment, and feed chiefly upon the Air, which they imbibe and condenſe in their ſpongy Parts, and beſides for their Subſtance they have fewer *Sap-Veſſels* than any other Kinds of Plants; therefore I have laid it down as a Rule in my *Hiſtory of Succulent Plants*; and 'tis from Experience, that the more ſucculent is any Plant, ſo does it require leſs Water; and ſo thoſe Plants that have the greateſt Proportion of *Sap-Veſſels*, and the leaſt of ſpongy Parts, require frequent Waterings, which we find to be true from common Experience in the *Garden*, and by examining the Structure of *Water-Plants*, ſuch as *Willows*, *&c.* which are for the moſt part compoſed of *Sap-Veſſels*, and are therefore ſo tough that they may be wrought into any Figure without breaking; but all juicy Plants are brittle for want of theſe Veſſels.

I believe if we were to examine with the *Microſcope* the Numbers and Sizes of the *Sap-Veſſels* in every ſort of Plant we have a mind to propagate, we might come to a Certainty of the Proportion of Moiſture every Plant requir'd.

Since I have now given my Remarks upon *Water*, and the manner of uſing it in *Gardens*, I believe it will not be unacceptable to the Curious, if I give them an Account of the Method I have uſed to propagate *Water-Plants* in *Pots* and *Caſes*, which hitherto I believe has not been practiſed in *England* by any but my ſelf, and is what I find to ſucceed very well.

CHAP. IX.

Of WATER-PLANTS, *whether* Domeſtick *or* Foreign, *the Manner of Propagating them in our Gardens.*

IN the Firſt Part of this Work I have taken ſome ſhort Notice, that we have *Terrene* Plants, *Amphibious* Plants, and *Aquaticks*; but I ſhall now be more particular concerning the latter, and endeavour to ſhew how far the right Diſpoſition of each of them ought to be conſider'd when we are about to propagate them. I am perſwaded, many curious Perſons would have made Plantations of *Water-Plants* in their *Gardens* long ſince, if they had known how to have done it, as the beautiful *Flowers* of ſome of them at leaſt equal, if not ſurpaſs many of our moſt curious *Land-Plants*, and that chiefly in the *Weſt-Indies*; altho' *England* has alſo its Share, witneſs the *Water-Lilles* and *Ranunculus's* of different Kinds, ſo frequently found in our *Rivers* and *Ponds*.

Now that *Water-Plants* may have their place in *Gardens*, even altho' there are neither *Ponds*, *Rivers* or *Springs* to plant them in, I ſhall recommend the following Method, which I have experienc'd with good Succeſs. Firſt, provide either large *Garden-Pots* glazed within ſide, and without Holes in their Bottoms, or elſe cauſe ſome Troughs or Caſes of Wood to be made according to the third *Figure*, *Plate* II. of *Oaken Boards*, about two Inches thick; ſuch Caſes ſhould be ſix Foot long, two Foot wide at the Bottoms, and two Foot and a half deep, if they are for large *Plants* that grow under Water, or ſhallower for ſuch as do not require deep Waters; the Corners and other Joints of ſuch Caſes ſhould be ſtrengthen'd with Iron, the Inſides well pitch'd, and the Outſides painted. In theſe *Pots* or *Caſes* put common unmix'd Earth, ſo much as to fill one third Part of them, for *Water-Lillies*, *Pond-Weeds*, or ſuch others as require depth of Water for their Leaves and Branches to ſwim in, and fill about two Thirds of them with the like Earth for *Wate-Plantains*, *Water-Aroms*, and *Ranunculus's*, which love leſs Depth of Water than the former; then for thoſe *Plants* which grow in *Marſhes* and *Bogs*, the Earth may lie within five Inches of the Top. This Work may be done in *April*, when the *Water-Plants* begin to appear, which may be brought in and planted from that time 'till the middle of *June*, filling up each *Pot* or *Caſe* with Water as ſoon as the *Plants* are put in them. It muſt be obſerv'd likewiſe, that many of the *Water-Plants* are *Wanderers*, without taking any Root in the Earth; ſuch are the *Water-Soldiers*, *Frog-Bits*, and *Ducks-Meat*, which ſwim about from place to place, as the Wind carries them, and only ſtrike their Roots into the Water; therefore a ſmall quantity of Earth at the bottoms of the *Pots* they are ſet in, will ſuffice to maintain the Water in a right State for their Support. In a word, to obſerve the Mode of Growth, and the Expoſure of thoſe *Plants* we collect, will beſt help us to underſtand the right way of Cultivating them with Succeſs, when we are about to civilize them in our *Gardens*; where in all things the plain Road of Nature ſhould be follow'd, or at leaſt kept in view, if we deſire healthful Plants.

I find that in this artificial Management of *Water-Plants*, thoſe of *Rivers* ſhould be frequently refreſh'd with Spring-Water, and ſuch as delight to grow in ſtanding *Pools* or *Ponds*, to be ſeldom interrupted with it. It is alſo obſervable, that *Water-Plants*, upon removing them, will be as long before they recover themſelves to renew their Growth as *Land-Plants*, which may ſeem ſtrange to ſome who are uſed to ſee the ſudden Refreſhment of a decay'd *Land-Flower* when it is put into Water. And whereas it is a common thing to ſhelter *Land-Plants* from the Heat of the Sun after tranſplanting, *Water-Plants* muſt be dealt with directly contrary, and be expos'd to the Sun after they are removed.

The *Seeds* of *Water-Plants* are of two Kinds, one Claſs always ſwiming on the top of the Water, and the other ſinking to the bottom as ſoon as it is ſhed, following the Nature of their Mother Plants in that reſpect: For if the Seeds of thoſe Plants, which naturally ſwim on the top of the Waters, ſhould ſink to the bottom, ſuch Seeds would then be removed from the proper Station requir'd for their Growth, and would therefore periſh: And ſo likewiſe the Seeds of thoſe Plants, which Nature directs to grow under the Water, will not ſwim on the top of it. We may take notice that Providence has ſo wiſely order'd, that in our Climate not any *Water-Plant* is Ever-green, but that they are all of them either Vivacious or Annual, loſing their Leaves down to their Roots, or elſe periſhing entirely, their Seeds only excepted; for there is no Probability of their living and growing in the frozen Waters; and it is therefore the more neceſſary I ſhould ſay ſomething concerning the Preſervation of their Seeds, to ſupply us with the ſeveral Kinds from Year to Year, which without doubt will produce as many Varieties as the Seeds of Land-Plants do every Year; and beſides, the Method which I ſhall preſcribe for the preſerving the Seeds of *Aquatick Plants*, may be uſeful for the tranſporting of them from remote Parts, or foreign Countries, which may be done more eaſily in Seeds than in Plants already grown.

In order to ſave the *Seeds* of theſe *Plants*, we have no more to do than to follow them from the Flower 'till they are ripe, and then to put them in Earth and Water to preſerve them for Vegetation the Spring following, for Nature takes that way, and in this there is no Difficulty. The *Pots* and *Caſes* I have already directed, are proper to put them in as ſoon as they are gather'd; then let them ſink or ſwim in the Water 'till the Spring cauſes them to ſprout, they will proſper with little Attendance; but indeed if we can be happy enough to meet with an ingenious Correſpondent in any Part of *America*, where the Waters ſo generally are adorn'd with beautiful *Plants*, we muſt contrive ſome particular Method to preſerve them during their Tranſportation; and for their Culture when we receive 'em, ſuch as putting them (each Sort by it ſelf) in Bottles of Water and Earth, with large Mouths, cover'd only with Linen-Cloth, and not with Corks, which would cauſe a Ferment in the Liquors: Place thoſe Bottels in ſome Veſſel of Water 'till they can be brought to us, and then ſow them in the Pots, prepared as I have already directed for *Plants* of this Nature, and place them in *Hot Beds* 'till the Weather with us will nearly anſwer the Heat of the Climate they came from. At the gathering their *Seeds*, ſtrict Obſervation ſhould be made of the Depth of Water they grow in, the Situation, the Quality of the Soil under the Water, and whether they inhabit running or ſtanding Waters; and above all, the Taſte of the Waters they grow in, whether ſalt, brackiſh, or freſh, ſhould be obſerv'd; by ſuch Inſtructions I think it will be impoſſible to fail of the Succeſs we deſire.

When we have collected a ſufficient Variety of *Water-Plants* into our *Gardens*, we may prepare to diſpoſe them in *Claſſes*, and range the ſeveral Tribes in proper Order, which would be very uſeful to ſuch as read *Lectures* on *Plants*; for indeed the want of ſome ſuch way as this for the Cultivating of *Aquaticks* in a narrow Compaſs of Ground, has given the Students in *Botany* the greateſt Trouble in their Studies, and has been the Occaſion that *Water-Plants* are ſo little known. The moſt proper Seaſon for diſpoſing and removing them is as ſoon as they are out of Flower, and the Leaves begin to decay, which is about the beginning of *September*; their *Stems* or *Branches* muſt then be cut off near the Root, and their Roots planted at due Diſtances in the *Pots* or *Caſes* already deſcribed.

The *Water-Lillies*, which I ſo much commend for their Beauty, are of ſeveral Kinds; the *Double White*, the *Single White*, and the large *Single Yellow* flowering Sort, which bears a Fruit as large as a *Tennis-Ball*: And beſides theſe, I have heard of ſmaller Sorts of them in *England*, but have not yet found them; the large Kinds bloſſom in *June* and *July*; that with the Yellow Flower ſomewhat ſooner than the others: We may find them in quiet Waters, as in a *Pond* at the Back of *Twitenham*, where I have gather'd three Sorts, but the Yellow Sort eſpecially is very plentiful in the River of *Thames* about *Brentford*, where there are many other pretty Sorts of *Water-Plants*.

In the Ditches about *Lambeth*, and near the *Neat-Houſes*, *Weſtminſter*, I have obſerv'd great Varieties; as alſo near *Hamſted*, and upon the Banks of the *Thames* over againſt *Greenwich*; but I am told there are not in any Place in *England* ſo many different Species as in *Cambridgſhire*, which abounds ſo much in curious *Plants*, that the priſed as many others.

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OF THE *GREEN-HOUSE,* AND Exotick Plants.

CHAP. I.

Of the GREEN-HOUSE, *or* CONSERVATORY; *with Directions for Sowing* Exotick Seeds, *and the beſt Method of Gathering them abroad for Tranſportation, and the Manner of Packing them up.*

AS there is nothing more difficult in the Management of *Exotick Plants* than the right underſtanding of the *Conſervatory*, where they are to ſtand in the *Winter*, ſo I think it neceſſary in this Chapter to preſcribe ſuch Rules for the building and ordering of *Green-*

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Glaſs Caſes of ſeveral Kinds,

at one time *Orange-Trees*, *Plants* from the *Cape* of *Good Hope*, *Virginia*, *Carolina*, and indeed ſuch as grow within ten Degrees of the *Line*. I muſt confeſs, when I was firſt acquainted with *Aloes*, *Indian-Figs*, and ſuch like *Plants*, I thought they could never have Heat enough, and deſtroy'd many by that too common Notion: I could hardly venture them out of *Hot Beds* in the moſt extream Heats of the *Summer*; and in the *Winter* they were half roaſted with ſubterraneous Fires I had made under the *Glaſs Caſes* where they ſtood.

But the great Inconveniencies I found by that Practice, put me upon making other Trials; I was ſoon convinc'd they would live in the open Air in the *Summer*; and I found that by bringing them acquainted with it in that Seaſon, they became more hardy to reſiſt the Cold of the *Winter*; they were then vigorous and healthful; and I had no more to do in the moſt rigorous Seaſons, but to keep them from the Froſts, and ſo to diſpoſe the *Conſervatory*, that when they came to be ſhut up in ſevere Weather, there might be Air enough enclos'd in the Houſe to circulate freely about the *Plants*, and dry up thoſe Damps which are at ſuch times apt to riſe from the Moiſture of the Pots of Earth; for thoſe Damps I found commonly had the worſt Effects upon Plants, by bringing Moldineſs upon their Leaves or Stalks, which always rotted 'em unleſs timely prevented. To correct theſe, as well as prevent the Froſts from getting into the Houſe in very violent Seaſons, I made uſe of a little *Charcoal Fire*, after it burnt clear and had done ſmoaking, which I hung up between the Windows and the Plants. One of theſe Fires would keep the Air in the Houſe warm and dry for about twenty four Hours, without renewing; and this Method I found had a much better Effect upon the *Plants* than the ſubterraneous *Fires*, which commonly rais'd Damps, crack'd the Paſſages of the *Flues* where it run, and often fill'd the Houſe with Smoak, which is a great Enemy to *Plants*, eſpecially the Smoak of the *Sea-Coal.*

Now altho' I found ſo much Benefit by *Charcoal Fires*, that the laſt hard *Winter* I did not loſe one *Plant*; yet even thoſe Fires are not without their Inconveniencies; where there are many of them, they are ſo ſuffocating that ſeveral Men have been choak'd by them, upon going into the Places where they have been burning; and if they be not made to burn clear before they are put into a Houſe, the Sparks will fly in ſuch great Numbers from the burning Coals, that the Houſe would be in danger from them of being ſet on Fire.

Theſe Inconveniencies indeed are enough to leſſen our Eſteem for *Charcoal Fires*; but it depends upon the Care of the *Gardener* that he avoids thoſe Dangers, by putting into his *Green-Houſe* only a ſmall Fire or two, in proportion to the bigneſs of the Houſe, and by taking Care when he puts them in, that they are rather declining than increaſing in their Heat.

Since I have ſeen ſome of the new invented *Chimneys* ſo judiciouſly improv'd by my Learned and Ingenious Friend Mr. *Diſaguliers*, F. R. S. I am of Opinion, that nothing can be contriv'd more for our purpoſe of preſerving Plants in the *Winter* from Froſts and Damps, than one of them placed artificially in ſome part of a *Green-Houſe*; they will afford us all that we can deſire from any artificial Heat, for the Welfare of *Exotick Plants*, without any Inconvenience attending them; and neither the Trouble or Expence of Firing will be near ſo great as in the preparing of the other Fires I have mention'd; and the Expence perhaps not exceed the Charge ſome have been at in making and continually repairing *Stoves*, which are frequently out of order, beſides the double Advantage we may have from one of them, by ſetting it up in ſome Room joining to the *Green-Houſe*, where altho' a Fire may be kept conſtantly, yet the Heat may be let into, or kept out of the *Green-Houſe* at pleaſure; and that in ſuch Proportions, as to make the Air in the *Conſervatory* equal

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I ſuppoſe every one will all

think it would be pleaſant, as well as beneficial to *Plants*, if the *Conſervatory* was always join'd to the Dwelling-Houſe: Can there be any thing more agreeable in the *Winter*, than to have a View from a *Parlour* or *Study*, thorow Ranges of *Orange-Trees*, and curious *Plants* of Foreign Countries, bloſſoming, and bearing *Fruit*, when our *Gardens* without Doors are as it were in a State of Death, and to walk among thoſe Curioſities of Nature, as in the moſt temperate Climate, without any Senſe of the Froſt or pinching Cold that reigns abroad? And beſides, there is this Convenience in the joining the *Conſervatory* to the Houſe, that in cold Weather we may go into it without letting in the cold Air, or blighting Winds from abroad, which would injure the *Plants*.

The Situation of the *Green-Houſe* being thus fix'd upon, the Proportions of the Building muſt next be conſider'd, and that chiefly in relation to the Height and Breadth of the Room; for the Length of a *Green-Houſe* may be more or leſs, according to the Fancy of the Owner: But for the better Admiſſion of the Sun's Rays to paſs all over the Houſe, the Breadth of it ſhould not be more than the Height from the Floor to the Ceiling, which may be from ten to eighteen Foot.

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time to air the *Plants:* The *Saſhes* or *Caſements* being open'd, more or leſs in proportion as the Weather is cold or warm, and ſhould be always ſhut cloſe again before the Sun is off of the Houſe, that the Air in it may keep warm 'till the next Day. Some have practis'd with good Succeſs to lay the Windows of their *Conſervatories* ſloping about ten Inches; but as far as I have experienced, they will do as well upright. The Door ſhould be in the middle of the Front, and at leaſt four Foot wide, to admit large *Plants*; it ſhould be glazed like the Windows.

To theſe we muſt provide ſtrong Shutters, at leaſt an Inch thick, which in the *Winter* time ſhould be ſhut every Night for fear of Froſts, and alſo in extraordinary cold Weather, when violent Winds blow right againſt the Houſe.

For the better Security of the *Plants* from Cold, a Place for the laying up the *Gardener's* Tools may be built at the Back of the *Green-Houſe*, and over it a *Fruitery*, or *Seed-Room*; or in the lieu of the latter, fill the Roof full of dry Straw.

The beſt *Pavement* is that made with ſquare *Tiles*, which ſucks up Wet quickly, and never ſweats as *Marble*, or ſuch Kinds of hard Stone uſually does: And for the Lining of the Walls, nothing is preferable to the *Dutch Glazed Titles*, which are ſoon warm'd with the Sun, and reflect a great Heat into the Houſe.

A *Green-Houſe* being built anſwerable to theſe Directions, after it is well dry'd may receive Plants into it; but nothing injures them more than to ſet them into a damp Houſe. In the placing them in the Houſe, we muſt obſerve the following Particulars.

It is commonly practiſed to provide Rows of Shelves placed one higher than the other, from the *Eaſt* to the *Weſt* End of the Houſe; theſe ſhould be made to hold as many Pots with Plants as will fill up about one fourth of the Space in the Houſe, leaving the reſt for Air to circulate about the *Plants* when they come to be ſhut up cloſe in froſty Weather: For if the Houſe was to be crowded with *Plants* in the *Winter*, their too great Numbers would create Damps, by condenſing the Air in the Houſe; but a quantity of *Plants* proportionable to the Space of the Houſe, as I have already hinted, cannot over-power the Air in it, ſo far as to produce thoſe Damps. It is obſervable, that in Countries which abound in Wood, great Rains are very frequent, which ſeems to inform us, that the cold Nature of the many Trees there growing, and alſo the coldneſs of the Earth under the Trees condenſe the Air, and by that means breed Rain more than other places that are not over burden'd with Woods.

In the diſpoſing of the Shelves in the *Green-Houſe*, I allow one Third of the

Floor for them to ſtand upon; one Third from the firſt Shelf to the Windows, and as much from the laſt Shelf to the Back of the Houſe; ſo that we may walk round the *Plants*, which being placed in the middle Line of the Houſe, are ſafe from the extream Cold, which is generally nearer the Walls or Glaſſes.

Between the Windows and the firſt Shelf, at one End of the Houſe, ſhould be built the *Chimney* for warming the Air, and the Heat made to come from it into the Houſe, about a Foot above the Floor, which will riſe afterwards, and ſpread it ſelf over the Whole. Near the Place where this Heat comes in, place the moſt tender *Plants*; and by degrees, at greater diſtance from it, the moſt hardy. We may beſt judge of the Nature and Temper of *Plants*, by conſulting what Climates they were brought from; as for example, thoſe which come from Countries near the *Line*, muſt have the warmeſt place; if they grow on this ſide the *Line*, their Spring begins about the ſame time with ours; but if they were brought from the *South*-Side of the *Line*, then their Spring begins about *Auguſt*. All *Plants* of the *Cape of Good-Hope*, and other Parts beyond the *Line*, ſuch as *Aloes* of thoſe Countries, *Ficoides*, and ſuch like, flouriſh moſt with us from *Auguſt* 'till the End of *November*, 'till the Cold of our *Winter* checks their Growth.

All ſeedling *Plants* from hot Countries, which we raiſe in the Spring upon *Hot Beds*, ſhould be uſed to the Air as much as poſſible when they are once come up, for elſe they will hardly ſtand the *Winter*, tho' they are ſet in the warmeſt part of the *Green-Houſe*; but there will be little Danger of loſing any of them after they have been preſerved twelve Months, and have had the Trial of all our Seaſons.

I obſerve that the *Plants* which I have raiſed from *Seeds* brought from *Jamaica*, *Barbadoes*, *St. Chriſtophers*, and from others of the *Caribbe*-Iſlands, are the moſt tender, and hard to be kept: But I am perſwaded a Houſe built after the manner I have directed, with the Addition of one of the *Chimneys* I mention, would keep them, or any other, with very little Trouble.

Plants from *China* are indifferently hardy, as well as thoſe from *Perſia*; and I find that moſt of thoſe brought us from the *North* of *Carolina* and *Virginia*, whoſe Seaſons are but a little earlier than ours, and the difference of Latitude not more than twenty five Degrees *South* from *London*, may be naturalized without Difficulty to our Climate, after they have been ſhelter'd for two or three *Winters* with us: Witneſs that Wilderneſs of *Exotick Plants*, which that wiſe Encourager of Natural Learning, the late Biſhop of *London*, cauſed to be planted in his *Gardens* at *Fulham*, and have proſper'd ſo well without Shelter for ſeveral Years.

The Time for ſetting *Exotick Plants* into the Houſe is about the ſecond Week in *September*; and the middle of *May*, if the Froſts are paſs'd, they are commonly brought out of the Houſe: But altho' this is become a general Rule (in a manner) among the *Gardeners*, we muſt yet take this Caution with us, that all Plants are not alike tender; *Orange-Trees*, and moſt Plants of *Virginia* and *Carolina* are indeed rightly ſet in and out of the *Green-Houſe* at thoſe times; but *Myrtles* may come abroad ſooner by fifteen Days, and remain out of Doors 'till the middle of *October*. Again, *Aloes* ſhould not be brought out of the Houſe 'till the firſt Week in *June*, and ſet in again about the laſt Week of *Auguſt*; and ſuch *Plants* as live neareſt the *Line* ſhould yet be more confin'd to the Houſe than any I have yet mention'd: But concerning the Houſing and Bringing abroad of all ſorts of *Exotick Plants*, we muſt be ſure to obſerve this General Rule, *i. e.* that they muſt be perfectly free from Wet on their Leaves and Branches when they are ſet into the Houſe; and we muſt always bring them abroad, if poſſible, with the Advantage of a gentle Shower, to waſh and refreſh their *Leaves*.

It next follows that I deſcribe the Manner of raiſing *Exotick Plants* from *Seeds*, and that ſhould be done in this manner; When by Means of Correſpondents in Foreign Countries, or the Help of Curious Perſons at Home, who have by their Induſtry collected the *Seeds* of Foreign Novelties, we are provided with a Collection of *Seeds* from any hot Country, we muſt preſently prepare a *Hot Bed* for them; and while it is ſettling it ſelf for Uſe, ſow the *Seeds* in *Pots* ſeparately, marking every Sort, that when they begin to come up, we may the better know what we are to expect. When they have made their firſt *Leaves*, plant them out in other *Pots*, and give them a freſh *Bed*, when the firſt is cool, and as ſoon as the ſecond begins to decay, uſe them to the Air in the Day-time to harden them for the *Winter:* If by chance all the *Seeds* we ſow do not come up, keep the *Pots* they were ſown in 'till the Spring following in the *Green-Houſe*; for many *Seeds* will lie in the Ground 'till the ſecond Year without ſprouting, as I have often found, and they always prove to be *Trees*.

And that we may with the more Certainty propagate ſuch *Exotick Plants* from *Seeds*, I think it may not be amiſs to conſider the moſt proper Method of Gathering them in Foreign Countries, and packing them up for Tranſportation, that what *Seeds* we receive from Abroad may not loſe their *Geminative* Faculty before they come to us, or be deſtroy'd by *Inſects*, which often happens.

I would adviſe then, that all *Seeds* gathered abroad, which are deſign'd for Tranſportation, but eſpecially if they are to undergo a long Voyage, ſhould be cut from the *Plant*, with part of the *Branch* they grow upon, a little before they are going to ſhed or drop from the *Plants*, and in that manner laid in the *Sun* to dry thorowly before we offer to pack them up, for the leaſt Moiſture will rot the Seeds: All *Beans*, *Peaſe*, and Codded *Fruits* ſhould remain in their *Seed-Veſſels*, which will afford them ſome Nouriſhment, and preſerve them from the Injury of the Sea Air, which is pernicious to *Land-Plants*. *Fruits*, ſuch as have a *Pulp* or *Fleſh* over their *Seed*, ſhould be dry'd, if poſſible, with their *Fleſh*, and the Stalk or Part of the Branch they grew upon adhering to them; for Nature has provided proper Coverings for every Seed to defend it from Injuries, and for its Nouriſhment, 'till it is fit for the Ground: At the Gathering of every *Seed*, Notice ſhould be taken of the Soil, and the Situation, whether *Sand*, *Loam*, *Clay* or *Rockey*; the Side or Top of a Hill, whether Boggy-Ground, either expo'd to the Sun, or in ſhady Places, if under Trees, or in Plains; this is ſo very material, certain, that I know ſome *Plants* will not grow any where but in Woods, and there only under particular Kinds of Trees, as ſome of the *Orcbis* Kinds for example, which I have often try'd to propagate in my *Garden* to little purpoſe. When a ſufficient Collection of *Seeds* is gather'd, and well dry'd, put each Sort by it ſelf into Paper, with its Deſcription, Time of Flowering, the common Names they bear among the Country People, and the Uſe they make of each Kind; then put the Papers cloſe together into Glaſs-Veſſels, or Stone or Earthen Pots well glazed, and ſtop'd down cloſe, with Pitch or Rozin melted over the Corks or Stopples: Theſe being ſo order'd, ſhould be put into a Box, filling up the Spaces between them with dry Sand; and then after the Box is well ſecured, ſet it in ſome dry place of the Ship.

The ſmalleſt Kinds of Seeds, and ſuch as are of the leaſt Subſtance, ſhould be put into dry Sand, in ſeparate Parcels, according to their Kinds, for otherwiſe they would ſhrink for want of Air, which they ſhould, as much as poſſible, be debarr'd from while they are upon the Sea. All bulbous Roots ſhould be taken out of the Ground when their Flower-Stalks begin to decay; and when they are well dry'd may be pack'd up with dry Sand in Glaſs or Stone Veſſels.

But if it could be compaſs'd to ſend over *Plants* already growing, plant them four or five Inches aſunder in Boxes, having firſt pruned off their Branches ; between them plant the bulbous Roots, and over the whole ſprinkle ſome *Seeds* of the ſmalleſt Kinds, and then make a Cover of Hoops or Latice-Work to put over the Box, which will defend the Plants, while they are at Sea, from the *Rats*, and give a free Paſſage for the Air and Sun to come at the *Plants*. And to be yet more certain of their Welfare, an outſide Caſe of Boards, nail'd cloſe together, may be made to put over the Box in hard Weather, to defend the *Plants* from the Sea-Water: Theſe Boxes ſhould not be very deep, leaſt they hold the Wet too long about the Roots of the Plants: To avoid which, there ſhould be Holes at the Bottom for the free Paſſage of the Water, which the Plants ſhould have in ſmall Quantities when the Earth began to dry, which perhaps may be in twenty four Hours in ſome Climates, and not in three or four Days in others. *Plants* pack'd in this manner ſhould ſtand upon *Deck* if poſſible.

Thus having laid down the General Rules for the Ordering of a *Green Houſe*, and the *Plants* to be ſhelter'd in it, I ſhall in the next place proceed to give particular Directions for the *Culture* of ſuch Kinds of *Exotick Plants* as merit moſt our Pains and Admiration.

CHAP. I

Of ORANGE *and* LEM
and their Cultu

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The moſt proper Seaſon fo
tion of *Orange* Stocks into
February ; ſo that at leaſt the
Fortnight in that Month to pr
Growth, that their Shoots m

receive them, they require no ſmall Care to recover them from their Lethargy. I firſt adviſe that they be laid upon wet Moſs, in ſome large Room, where they may have the Advantage of as much Air from abroad as may be (provided if it be not too ſharp) in the Day-time only for about a Week; this Method, if they are turn'd once in twelve Hours, will recover their ſhrunk Veſſels, and ſwell their Bark; then their Roots muſt be examin'd, and their wounded and dead Parts cut off with a very ſharp Knife; and of the Earth about them, if they have any, very little taken away; their ſmall remaining Tops muſt likewiſe be prun'd off, leaving only ſuch Shoots as are vigorous about three or four Inches long, and all the Wounds of them cloſely plaiſter'd over with ſoft Wax: In this State their Roots muſt be laid in River or Pond Water for about twelve Hours, and ſet to drain for about half an Hour after they are taken out, before they are planted.

The Pots for theſe Stocks muſt be juſt big enough to admit of two Inches thick of the following Earth on every ſide their Roots and no more, leaſt the Warmth of the *Hot Bed* they are to be ſet into, has not ſtrength enough to reach them and make them ſtrike, for the *Hot Bed* muſt be very moderate and gentle, leaſt the Roots are ſcorch'd, and then it will be to little purpoſe ever to attempt the Recovery of the Plants.

The

The Earth which I have made uſe of with ſucceſs was one third part of rotted Wood, one third of freſh ſandy Loam, and as much *Melon*-Earth well mix'd and ſifted together; this Soil I always found to make my Trees proſper and produce excellent Fruit.

The Stocks being in this State, their Pots ſhould be ſet upon a *Hot-Bed* prepared as directed in *Chap.* I. of the *Kitchen-Garden*, when the great Heat is paſt, after the whole Surface of the *Bed* is cover'd with Mold, to prevent the Steam of the Dung riſing and annoying the Plants.

This *Bed* ſhould be made under a warm Wall, and ſhelter'd from the cold Air with Glaſs on the Sides and on the Top: The *Plants* being thus prepar'd for Growth, muſt be moderately water'd about once a Week 'till *April*; and then, if the Weather be very warm, every third Day. It is alſo to be obſerv'd, that at all ſuch times as the Sun ſhines warm upon them, their Tops muſt be ſhaded with *Mats*, leaſt the tender Shoots, which began to put forth, be ſcorch'd, and by that means periſh.

In *May*, when their Shoots begin to ſhow their Vigour, it will be neceſſary to give them Air by degrees, by opening the Glaſſes towards Sun-ſet, if the Evenings are not too cold; this, if it be done judiciouſly, will contribute to ſtrengthen them, and make them ſhoot green and healthy. During the Courſe of their firſt Shoot they muſt be ſhifted every ſix Weeks, at leaſt into freſh Hot-Beds; but as ſoon as *June* is paſt, I would not then adviſe any more Forcing, but rather endeavour to prevent them from ſetting out a ſecond Shoot, by expoſing them at large to the open Air in ſome place ſhaded from the *Sun*, where they ſhould remain 'till the firſt Week in *September*, and then carry'd into the *Green Houſe*; at which time, three or four Inches of the Earth on the top of their Pots ſhould be carefully taken away, without injuring the Roots, and as much freſh Mold put in its place.

The *Orange-Trees*, being thus ſeated in their *Winter* Habitation, ſhould have as much Air as poſſible allow'd them, Night and Day, 'till the latter End of *October*; the Windows of the *Green-Houſe* ſhould never be ſhut during that time, unleſs the Winds or Froſts happen to be very ſevere; and in the following *Winter*-Months, when the Weather is moderate, no Opportunity ſhould be let paſs of opening the Houſe.

Theſe *Trees*, altho' they love the Shade, yet quickly periſh if they have much Water; let them be frequently refreſh'd with it a little at a time, leaſt too much Wet about their Roots chill or rot them, and deſtroy the *Plants*. I find that *Sheep* or *Deer* Dung, ſteep'd in the Water for *Orange-Trees*, contributes to make them healthy. The Effect which violent and haſty Waterings will have upon theſe *Trees* will be, that the Leaves turn yellow, and often drop off; and above all will remain for a Year or two languiſhing, without putting forth any Shoots, and at length entirely go off. Now if by theſe, or ſome better Directions, a *Gardener* maintains his new *Orange-Trees* in good Health 'till the latter End of *February*, let him then renew the Earth as he did in the fore-going Autumn, and trim the Heads of his *Plants*, leaving ſix Inches or thereabouts of the preceeding *Summer*-Shoots, if they be ſtrong, or leſs in Proportion, as they are otherways, plaiſtering the Wounds with ſoft Wax, as I have before directed; they will, after this Operation, ſoon begin to ſprout, and make good Shoots the *Summer* following, if they are diſcreetly made acquainted with the External Air before they are ſet out of the Houſe.

It is commonly practis'd to bring them abroad about *Mid-May*, eſpecially if moderate Rains fall at that time: And I have known it laid down as a Rule, to ſet them out of the Houſe when the Leaf of the *Mulberry-Tree* is as large as a *Crow's* Foot, which perhaps may be a certain Sign of the ſettled Temperature of the Air. I have indeed my ſelf had little Regard to either of theſe Rules, but have chiefly truſted to the Time of the *New Moon* in *May*, which I obſerve commonly brings gentle Showers, and warm Weather.

For the *Summer* Station of theſe *Trees*, it is adviſable to provide ſome ſhady place in the *Garden*, either by fencing it in with Hedges of *Dutch Helm*, *Hornbean*, *Holley*, or *Evergreen Oaks*, about twelve or fifteen Foot high, or elſe to clear ſome place in the *Wilderneſs* or *Wood* to ſet them in, ſuch as may be ſeen at the Right Honourable the Earl of *Eſſex*'s at *Caſſiobery*, and ſome other Places; for in ſuch Shelter this *Plant* delights exceedingly. With this way of Management we may expect handſome Trees in three Years from their firſt Planting, minding to change their Pots as the Roots increaſe in bigneſs; which Work is beſt done in *February:* And let the *Gardener* take this Advice along with it, that he always plant theſe *Trees* ſo ſhallow in their *Pots* or *Caſes*, that none of the *Stem* be ſet below the Earth, but rather let ſome of the large Roots joining to the *Stem* be ſeen above it; and alſo that the Pots be not too large, for then the Roots would chill, by having too much Moiſture about them.

The third *Summer* after planting, the *Trees* will begin to bloſſom, and if they are in Health will ſet Fruit, which will be as big as a Muſquet-Ball when they are put into the Houſe, and ripen the *Summer* following.

No

That great Encourager (
late King of *France*, was
mirer of this *Tree*, that he
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Pleaſure of ſuch Furniture,
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quires: The firſt Groves of them that we meet with growing wild in *Europe*, are at *Eres* near *Thoulon* in *France*, which is between forty two, and forty three *Degrees Latitude*; and about *St. Remo*, and the *Riviera* of *Genoua* in the ſame *Latitude*, near the Sea, at the Foot of very high Mountains to the *North* of them; and the firſt Woods of them growing in *Italy*, are as far *South* as *Gaietta*; and ſo agreeable is the Air of the Sea to them, that in many Places more remote from the Sea than *Thoulon* and *Gaietta*, altho' farther *South*, they cannot be made to thrive without Shelter in the *Winter*.

The various Kinds of *Oranges* and *Lemons* would make a very conſiderable Article, if I was to mention each Sort in particular, and indeed would be of little Uſe; I ſhall therefore only mention ſome few which are the moſt common in our *Engliſh* Gardens. The *Civil-Orange* is, in my Opinion, the beſt, as well for the Beauty of its *Leaves*, as for the Goodneſs of its Fruit, which will come to Maturity with us. The *China-Orange* never makes a handſome *Tree*, but is always inclining to look ſickly, and ſeldom bears Fruit in Perfection. The *Curl'd Genoua Orange* is ſomewhat more pleaſant to the Sight, but is a very ſlow grower: And the *Strip'd Genoua*, for the beautiful Variegations of its Leaves, may well enough be introduced

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In *February* I prepare a *Hot Bed*, in which (as ſoon as the burning Heat is paſt) I place ſeveral Pots fill'd with light dry Earth, and ſow the Seeds of *Oranges* and *Lemons* in them, about an Inch deep, where they will remain about ten Days before they appear above the Earth; give them little Water 'till they come up, leaſt you rot the Seeds; for when they are taken freſh from the Fruit, the outward Membranes, which encloſe the Seeds, are always cover'd with a kind of *Mucilage*, which will remain moiſt for ſeveral Days, and is ſufficient, with the addition of a ſmall Heat, to make the Seeds ſprout, as an Obſervation of the Curious Mr. *Anthony Van Leuwenhoek* ſufficiently proves. He ſays that he took a litte *Copper Box*, and put ſome Sand into it, which for its whiteneſs, and becauſe it is uſed to ſcour *Tin*, is call'd *Scouring-Sand*. He adds, this *Sand* was very dry of it ſelf, but was ſomewhat moiſten'd by the *Seeds* he put into it, having newly taken them out of an *Orange*; this he did in *November*, and carry'd the *Box* ſhut cloſe in the Day-time in his Watch Pocket, and at Night had it put in a Veſſel of hot Water, by which Means the *Box* was conſtantly kept warm: The ſixth Day he open'd it, and found that the *Seeds* had already put forth Roots, near half an Inch in length; and from time to time, as he review'd them, found them increaſe and put out Branches. This Experiment of Mr. *Leuwenboek* indeed was made by him for a much greater End than what I now uſe it for: He endeavours to prove by it, that every Part of a *Plant*, as well their *Leaves*, *Flower* and *Fruit*, as their *Roots* and *Branches*, are all contain'd in the *Seeds*; and that their Germination is only the filling and explaining the minute Parts wrapt up in their *Seeds*, and not from any additional Parts they receive from the Earth they are planted in. But ſee this Curious Gentleman's further Remarks on this Head, in *Philoſophical Tranſactions. Numb.* 287.

But to return to my Deſign; I would rather adviſe the Sowing of *Lemon* or *Citron-Seeds* than thoſe of *Oranges*; for ſince neither of them will bear Fruit 'till they are either grafted or inoculated, and the *Lemon*-Stocks will as well receive the Buds of *Oranges* as thoſe of its own Kind, they ſhould be prefer'd for the ſake of their quick Growth and hardy Conſtitution. Now as theſe *Seeds* will riſe at leaſt four Inches high during the Warmth of their firſt *Hot-Bed*, let their Pots be ſhifted every five or ſix Weeks into freſh *Beds* 'till about *Auguſt*, and then begin to harden them for the *Winter*. I have ſeen *Lemon-Plants* rais'd after this manner, that have been near three Foot high the firſt Year; for growing together in little Groves, each *Plant* has a kind of Emulation to over-top the reſt, as if they knew the ill Conſequence of ſuperior *Plants* dripping upon them. I have already hinted how much Shade contributes to the Growth of *Plants*, but ſhall once more re-mind the *Gardener* to defend theſe young *Plants* from the hot Summers Sun, and give them Air only Mornings and Evenings.

The *February* after they are raiſed they ſhould be tranſplanted into ſmall Pots, and be put again into a *Hot-Bed*, 'till the Seaſon is ſufficiently warm to ſet them abroad; and in *July* ſome of them will be fit to *Inoculate*, and the reſt to *Inarch* the *May* afterward.

The moſt proper Seaſon for *budding* theſe *Trees* is about the tenth of *July*, at that time the *Buds* will readily grow; and the following Spring all the wild Part of the *Plants* above the *Buds* being cut off, and the Wounds cover'd with ſoft Wax, we may expect a good bearing Shoot of a Foot long at leaſt, before *Winter*, if they have the help of a *Hot-Bed*; and in two Years afterward they will begin to bear Fruit if they are well look'd after, and are not over potted.

But *Inarching* them is yet a much quicker way to make them bear, both *Flowers* and *Fruit*; this Work is done in *May*, and by the latter End of *Auguſt* following, they may be cut off; they will then have Fruit upon them, either green or ripe, as you made choice of bearing Boughs to inlay into the wild Stocks. I have heard of Trees, that in leſs than two Years, from the ſowing of the *Seeds*, has had *Fruit* upon them by this Means; and I have my ſelf raiſed an *Orange-Tree* after this manner, that had *Fruit* and *Flowers* upon it when it was not ſix Inches high. Mr. *Fairchild* at *Hoxton*, by a peculiar Method he has in performing this Work, has now ſome hundreds of little *Orange* and *Lemon Trees*, with *Fruit* upon them as large as any that is brought from abroad.

As I have now given ſuch Directions for the Management and Improvement of *Orange* and *Lemon-Trees*, as I have my ſelf practiſed with good Succeſs, I doubt not but ſuch as are cultivated by theſe Rules will not be leſs vigorous and healthful, and for ſome Particulars relating to the preſerving them from Froſts and Damps in the *Winter*: See the foregoing Chapter of *Green-Houſes*.

CHAP. III.

Of MYRTLES, JESSAMINS, *and* GERANIUMS, *their* Culture, *&c.*

WE have many ſorts of *Myrtles* in our *Engliſh Gardens* diſtinguiſh'd by the following Names: Thoſe with the largeſt Leaves are the *Orange-leav'd Myrtles*, the *Spaniſh Broad-Leaf*, the *Portugal-Myrtle*, the *Nutmeg-Myrtle*, and that with the double Bloſſom: Beſide which, we have the *Nutmeg-Myrtle* with variagated Leaves, which is accounted a Rarity.

Thoſe with ſmaller Leaves are the *Upright-Myrtle*, the *Silver-leav'd Myrtle*, the *Box-leav'd* and *Birdſneſt-Myrtles*, and the *Roſemary* and *Thyme-leav'd* Kinds. All theſe, except the *Orange-leave Myrtle*, and that with the double Bloſſom, are very eaſily propagated by Cuttings; but thoſe two Kinds are much better encreas'd from *Layers*.

The moſt proper Seaſon of laying *Myrtles* for Encreaſe, is in *May*, when the youngeſt Shoots only, ſuch as are tender, ſhould be bent into the Earth after it is well ſtirr'd;

and thoſe, if they are often refreſh'd with Water, will ſtrike Root, and be fit to take off from the Mother Plants the Spring following; but if we lay down Shoots of a Year old, they will never ſtrike Root with all the Art you can uſe: So we muſt likewiſe obſerve, that the Cuttings we deſign to plant ſhould always be young and tender, ſuch as we find upon the *Myrtles* in *July*; 'tis then the moſt proper Seaſon for planting them, ſtripping off the Leaves two Inches from each Cutting, and ſetting them that depth, about an Inch a-part, in Pots of fine light Earth, watering them frequently 'till they have taken Root, which will be about the latter end of *Auguſt*. This young Plantation ſhould remain 'till the ſecond *March* before they are tranſplanted into ſingle Pots, for to remove them ſooner would endanger them, becauſe then their ſmall tender Roots would not be ſufficient to draw away the Moiſture of the Earth about 'em ſo quickly as one would wiſh, and then it would chill the Roots. However, when they have once got large Roots, they delight in Water, and ſhould be frequently refreſh'd with it: They covet the Shade in the *Summer*, and will by means of that Help make much ſtronger Shoots than thoſe that are expos'd to the *Sun*.

About *Mid-April* ſuch old Trees as have been neglected and have thin Heads, may be prun'd about the Roots, and freſh Earth put to them, and have the Branches of their Heads cut within three or four Inches of the *Stem*: Being thus order'd, they will prepare for ſhooting by that time they come abroad, and make handſome Plants that Summer, if they have Water and Shade enough.

The *Myrtle* delights ſo much in M[illegible]ſture, that I have known a Pot of it ſet in a ſhallow Baſon of Water, withinſide of a Window expos'd to the *South*, that has ſhot above four times as much in one Summer as any that have ſtood abroad, and has continu'd growing at that extravagant rate for ſome Years, without renewing the Earth in the Pot, by only taking care to ſupply the Baſon with freſh Water as it wanted; but the Shoots of this *Plant* were very ſlender.

In diſpoſing of theſe and other *Plants* in the Shade, we muſt not ſuffer any Trees to drip upon them, or confine them in too cloſe a place, they muſt have the free Air round about them and above 'em, or elſe the Shoots they make will be ſlender and weak.

The next *Plant* I ſhall take notice of is the *Jaſmin*, of which we have many ſorts which will not bear the Cold of our Climate, and are therefore ſhelter'd in the *Conſervatory* during the *Winter*: They are the *Spaniſh-Jaſmin*, the *Portugal-Jaſmin*, the *Indian-Jaſmin*, the *Arabian-Jaſmin*, one ſort with ſingle white Flowers, the other with double

Bloſſoms; and the *Coffee-Tree*, which is another kind of *Jaſmin*, bloſſoming at Autumn: Beſides theſe, there are many other Kinds in the *Amſterdam Gardens* which would be too tedious to mention.

The *Spaniſh-Jaſmin* is the moſt common of theſe; it bears white Flowers tinged with Purple on the Back of the *Petals*, or *Flower-Leaves*, and is very well ſcented: The Time of its Bloſſom is from *Auguſt* to *November*, and ſometimes all the *Winter* if it be kept warm and have Sun enough; this is propagated by Grafting it on the *Common White Jaſmin* in *March*, as alſo by Inarching it in *May* upon the ſame common Sort, and the inarch'd *Plants* may be cut off the middle of *Auguſt* following. In *February* we ſhould always cut off the Branches within four or five Inches of the Stem; and after they have freſh Earth put to their Roots, they may be ſet near the Glaſſes or Windows of the Houſe; theſe love not too much Water, and a *medium* Soil between Sand and Clay, without Dung; they are to be houſed with the *Orange-Tree*.

The *Portugal-Jaſmin* likewiſe bears a white Flower tinged with Purple, but the Bloſſoms are not ſo large as thoſe of the former, tho' in much greater Number: Sometimes I have ſeen near one hundred in a Cluſter; they ſmell like *Orange-Flowers*, and laſt a long time; the Leaves of the Plant are Ever-green (as are thoſe of the former) ſomewhat reſembling thoſe of the *Ivy*, it is propagated like the fore-going *Jaſmin*, and likewiſe by Cuttings planted in *May*, taking notice that they be of young Wood, and that at leaſt one Joint be ſet in the Earth, for at that part they take Root, tho' not 'till the ſecond Spring after Planting. I find that the *Plants* raiſed from *Cuttings* are apt to ſhoot very vigorouſly, and are therefore barren; but thoſe which are *grafted* or *inarched* upon common Stocks bloſſom every Year very ſtrong, which may proceed from the difference of Veſſels in the Stocks, and the Graft which checks its over Vigour.

This *Plant* begins its Bloſſom in *Auguſt*, and continues flowering 'till *October*; we may cut off the *inarched Plants* in the middle of *Auguſt*, which is the time of releaſing all other Plants grafted in the ſame manner, ſetting them immediately under ſome Shelter, leaſt they be damag'd by the Winds, which often break the *Cion* from the Stock. For this End of *Inarching*, we ſhould be careful to make Proviſion of ſome Plants of the *Commom Jaſmin* in Pots the Year before we deſign to graft, otherwiſe they will not be vigorous enough to incorporate with the *Cions*.

This *Jaſmin* ſhould be ſet in and out of the Houſe with the *Orange-Tree*, putting freſh Earth to the Roots in the Spring and

Autumn, as we muſt do to every other *Exotick Plant :* But as *Orange-Trees* love Shade in the *Summer*, this cannot have too much *Sun.*

The *Indian-Jaſmin* has Leaves ſomewhat like the former ; it bears Bunches of yellow Flowers of a very agreeable Scent ; it begins to flower about *Auguſt*, and continues its Bloſſom 'till the Spring following. I have frequently gather'd ripe *Seeds* of it, and have raiſed *Plants* from them, ſowing them as ſoon as they were ripe, and giving them the Aſſiſtance of a *Hot-Bed :* But the moſt common way of raiſing this *Plant* is from *Layers* in Autumn, or in the Spring, when we can get young Shoots to lay down, which ſhould always be as tender as poſſible for this Work, or they will not ſtrike Root, which muſt be obſerv'd as a Rule in the laying of every kind of Plant. The *Layers* of this *Jaſmin* will not be ſufficiently rooted 'till they have been a full Year in the Ground, and then may be taken off and planted in ſingle Pots. The beſt Seaſons of tranſplanting this Kind, is either in *April* or middle of *Auguſt*, the Earth for *Orange-Trees* does very well for this *Plant*, and it muſt be houſed as the other Kinds of *Jaſmin.*

It would be well to try whether this Sort would not encreaſe by Inarching it upon the *Common Jaſmin* ; I ſee no reaſon why it ſhould not as well as the *Portugal* Kind; but if that will not do, the *Common Yellow Jaſmin*, I think, can hardly fail.

We have two Kinds of the *Arabian-Jaſmin*; one with ſingle Flowers, and the other with double Bloſſoms; in other reſpects they are alike, and require the ſame kind of *Culture*; the Flowers of both are white and extreamly ſweet-ſcented, but are ſomewhat differing from the other kinds of *Jaſmin* in their Figure: Both theſe Sorts bloſſom about *Auguſt*, and with good Management bring a great many Flowers; the Leaves are round, ſomewhat curl'd, and ſet on in Pairs at the Joints: I have raiſed them from Cuttings taken off in *April*, when theſe Plants ſhould be always pruned within two or three Joints of the Stem, and then have freſh Earth put to their Roots; by means of this Pruning they will ſhoot near a Foot in a Summer, as I have ſeen at the *Leyden Gardens*, where they have near one hundred of them in good Health.

This has been eſteem'd a very tender *Plant*; but I find it is more injured by Wet than Cold; it will ſtand the *Winter* very well in ſuch a *Green-Houſe* as I have deſcribed, if it has not too much Water, and may be ſet abroad the latter end of *May*, or beginning of *June*, and remain out of Doors 'till about the 20th of *Auguſt*: The Earth it chiefly delights in is at leaſt two

Parts in three of Sand, and the reſt freſh Mold from under a Turf: We may try to inarch it upon the *Spaniſh Jaſmin*, or increaſe it by *Layers* at the Pruning Seaſon.

The *Coffee-Tree* is another Kind of *Jaſmin* brought from *Arabia Felix*, about the Latitude of twenty or twenty one; the Leaves are like thoſe of our *Cheſtnut-Tree*, but are ever-green, and the Flowers like thoſe of our *Common Jaſmin* in Figure and Colour, but are not ſo ſweet-ſcented; they grow in Cluſters at the Joints, near the Extremities of the young Branches. About *July* this *Plant* begins to bloſſom, and continues flowering 'till *October*, ſetting plentifully with Fruit, which remains upon the Tree 'till the *July* following before they ripen, and are then of a dark red Colour, and in their Shape and Size ſomewhat reſembling the *Berries* of the *Lauro Ceraſus*, but have two *Kernels* in each of them, which ſplit in the middle like the *Bay-Berries* of the Shops.

In the *Amſterdam Garden*, which is ſo famous for curious *Plants*, I have ſeen ſome of theſe Trees near eighteen Foot high, ſo full of *Berries*, that ſeveral Pound Weight of Fruit was gather'd off of two Trees only. The *Hollanders* firſt got *Plants* from *Arabia*, which they afterwards planted about *Batavia*, and having increas'd them there, they ſupply'd the *Garden* at *Amſterdam* with them, and have now raiſed ſo many from Seeds that ripen'd in *Holland*, that they have ſent over ſeveral Trees to their Settlement at *Surinam* in the *Weſt-Indies*, in order to cultivate them in that Country, where they will undoubtedly turn to good Account, as I am perſwaded they would do if they were propagated in the *South* Parts of *Carolina*, which I think would be well worth our Trial, if that Country remains in our Hands.

In the *Culture* of this *Plant* the *Dutch Gardeners* prepare a Soil for it compos'd chiefly of Sand, and the Refreſhings they give it with Water are ſeldom and ſparing in the *Winter*; but in the *Summer* it has a more plentiful Allowance, eſpecially during the time of its Bloſſom. About *June* they take it out of the Houſe and waſh and clean the *Leaves* and *Branches*, and letting it remain in the Air 'till the beginning of *July*, they then ſet it in again to the *Conſervatory* for flowering. In *April* and *Auguſt* they give freſh Earth to the *Plants*, and they thrive extreamly.

In the raiſing of theſe *Plants* from *Seeds*, they firſt ſeparate the *Kernels* in each *Seed*; and after they are cleanſed from the Muſcilage about them, they are immediately ſet two Inches deep in Pots fill'd with ſandy Soil, and plunged into *Hot-Beds*: The *Seeds* being

ing thus order'd, muſt be kept moiſt by frequent Sprinklings of Water 'till they come up, and the Glaſſes over them always kept cloſe; about ſix Weeks after Sowing they will begin to appear, and have two or three Leaves a-piece before *Winter*. I have heard, that unleſs the *Seeds* are ſown as ſoon as they are gather'd they will not come up, and hitherto there is no other way known of propagating this *Plant* but from *Seeds*, tho' I think it would not be againſt Reaſon to try to Inarch it upon ſome other Kind of *Jaſmin*.

The *Geranium* is a *Plant* whoſe Varieties are very conſiderable, if we were to join thoſe of our own Country with the Kinds we receive from *Africa*, it takes its Name of *Cranes-Bill* from its Seeds, which ſomewhat ſemble the *Beak* of a *Crane* or *Stork*: Hitherto the *Exotick Kinds* have carry'd *Latin* Names only, which I think help to confound ſome *Gardeners*, and indeed are too long to recite; I ſhall therefore, ſince I have this Opportunity, give each Sort, which we cultivate at preſent in our *Green-Houſes*, a ſhort *Engliſh* Name for the greater Eaſe of the Memory.

Many of the Sorts I deſign to treat of have been figur'd by the Learned and Accurate Dr. *Commelin*, *Botanick* Profeſſor at *Amſterdam*, and that late Admirable *Botaniſt* Dr. *Herman* of *Leyden*, to whoſe Works I refer for the Cuts of thoſe I am about to mention.

In the *Hortas Lugduno Batavus*, Page 275, we find the *Geranium Africanum Arboreſcens*, *Ibiſci folio rotundo*, *carlinæ odore*, which we may *Engliſh* the Round Mallow-leav'd Cranes-Bill.

Page 278 of the ſame *Geranium Africanum Fruteſcens*, *malvæ folio Laciniato odorato*, or Notch'd Mallow-leav'd Cranes-Bill.

Page 283, *Geranium Africanum*, *Alchimillæ Hirſuto Folio*, *Floribus Albidis*, or Alchimilla-leav'd Cranes-Bill.

Page 285, *Geranium Africanum*, *Noctu Olens*, *Tuberoſum & Nodoſum*, *Aquilegiæ foliis*, or Colombine-leav'd Cranes-Bill.

In Dr. *Commelin's Prælud. Botonic.* Page 51, *Geranium Africanum Arboreſcens*, *Archimillæ hirſuto folio*, *floribus rubicundis*, which we may call the Painted-leav'd Cranes-Bill, as I ſhall further explain.

Page 52, *Geranium Africanum*, *foliis inferioribus Aſari*, *ſuperioribus Staphydis Agriæ*, *Maculatis*, *Splendentibus*, *& acetoſæ Sapore*, which we may name Spotted Ivy-leav'd Cranes-Bill.

Page 54, *Geranium Africanum fruteſcens folio Craſſo*, *& Glauco*, *acetoſæ Sapore*, or Sea-green Cranes-Bill.

Beſide theſe, we have in our *Gardens* two Dwarf Kinds of *Cranes-Bill*, with tuberous Roots, whoſe Flowers ſmell ſweet in the Night: I have not ſeen any Cuts of them, and therefore ſhall not give the Authors Names; the one I ſhall call the *Anemone-leav'd Night-ſcented Cranes-Bill*, and the other the *Fenil-leav'd Night-ſcented Cranes-Bill.*

The firſt of this Liſt makes a Shrub of three Foot high; the Leaves ſmell ſomewhat like *Rhubarb*, and it bears large Bunches of Purple Flowers variegated with a darker Colour; this bloſſoms from *July* to *September.*

The Second, with the notch'd Leaves, is a Shrub about the height of the former, with ſweet-ſcented Leaves; the Flowers are ſmall, and of a very pale purple Colour, and appear about *May* and *June.*

The Third has Leaves like the *Plant* call'd *Ladys Mantle*, is a low Plant in compariſon with the others, and bears white Flowers about *June.*

The Fourth has large Knots at the Joints, and Leaves like the *Columbine*; the Flowers which commonly appear in the *Summer* are extreamly ſweet in the Evenings, but have no Scent in the Day-time.

The Fifth, which I call the *Painted-leav'd Cranes-Bill*, makes a Shrub ſometimes four Foot high, and bloſſoms very plentifully all the *Summer*, bearing large Cluſters of Pink-colour'd Flowers; each of its Leaves are curiouſly mark'd with a dark-colour'd Streak in the ſhape of a Horſe-Shoe; which together with the pleaſant Green of the Leaf is very beautiful: And what is likewiſe worthy our Notice, when theſe Leaves decay the green Parts change into a fair Yellow; and the dark Streaks, which are naturally almoſt Black, alter into a bright *Vermillion*; ſo that I cannot help ſometimes, for the ſake of ſo agreeable a Variety, bruiſing ſome of them to forward their Decay. The Alteration of Colours in the Leaves of this *Plant* gave occaſion to a Learned *Member* of the *Royal Society*, Dr. *Stuart*, to conſider the Cauſe of different Colours in the Leaves and Flowers of Plants, which he has ſo judiciouſly ſet forth in a Letter he was pleas'd to honour me with upon that Subject, that for the Embelliſhment of my Work, I ſhall inſert it in the Concluſion of this Chapter.

The Sixth Kind mention'd in the Liſt has ſhining Leaves like thoſe of *Ivy*, and pretty Flowers, of a pale purple Colour, variegated with a deep Red: the *Plant* inclines to run upon the Ground, and therefore to give it the better Appearance, we are forced to ſupport it with Stakes; it bloſſoms in the Autumn.

The Seventh has thick juicy Leaves of a Sea-green Colour, taſting ſomewhat like *Sorrel*; the Branches are naturally ſo weak that they muſt be ſupported with Sticks. About *July* this *Plant* begins to flower, and remains bloſſoming 'till about *September*; the Flowers of this Kind are of a pale Fleſh Colour, and variegated with Crimſon.

All theſe Kinds are propagated either by *Seeds* or *Cuttings*; the *Seeds* may be ſown in *March* upon a *Hot-Bed*; but the moſt proper Seaſon of planting the *Cuttings* is about the End of *May*, and then they will eaſily ſtrike Root in the natural Ground, and become handſome *Plants*, fit to be potted the *Auguſt* following; they love a medium Soil without Dung, and delight in Water; they may be houſed with the *Orange-Trees*, for they are not very tender.

The other Kinds of *Geranium*, ſur-nam'd *Night-ſcented* Bloſſom, at uncertain times in the *Summer*, and are propagated by parting their Roots in *May*. The Leaves of the *Fennel*-leav'd Kind, have a very grateful Scent; both theſe are hardy, and may be houſed with the others; they love a light Soil.

I ſhall now conclude this Chapter, with the Ingenious Letter which I promis'd relating to the Colours in the Leaves and Flowers of *Plants*.

To

To Mr. BRADLEY.

London May the 9*th*, 1717.

SIR,

YOUR ingenious Converſation, join'd with the Delights of Mr. *Balle*'s curious *Gardens* at *Cambden-Houſe*, made ſuch an Impreſſion t'other Day, as led me into the following Thoughts on the Subject You then ſtarted, concerning the Variation of Colours in the *Leaves* and *Flowers* of *Trees* and *Plants*, ſuch as is remarkable in the variegated *Hollies* and *Tulips*; of which Variegation you have certainly aſſign'd the true remote Cauſe, in the ſecond Part of your *New Improvements of Planting and Gardening*, Cap. VII. Sect. 1. of the *Tulip*, where you aſſert, that a Weakneſs and Defect of Nouriſhment produce that Variety of Colours, which was not naturally and originally in the *Plant*, which you ſupport by Obſervations, Experiments and Hiſtories there, and in ſeveral other Parts of your Works, ſo as to put it beyond all doubt.

On this Occaſion you ſhow'd me a bruiſed and faded Leaf of the *Geranium Africanum Arboreſcens Alchimillæ hirſuto folio, floribus rubicundis*, Comel. Prol. Bot. partly Green, but turn'd of a pretty deep Red in the bruiſed Parts; this gave Riſe to our Diſcourſe con-

Thoughts concerning
your various Obſerva
will ſoon expunge t
converſant about theſe

I imagine then tha
as preternatural Colour
are owing immediatel
lating or contained in t
to the Veſſels themſel
pears by the expreſs'd
Colour of the *Leaf* or
it's drawn, while the
which is the Veſſels re
loſe their Colour with
ing examin'd by the na
ſcope, appear colourleſ
far as they are drained
Theſe then being tran
Rays to our Eyes, but tra
which the

neceſſary to reflect this or that Kind of coloured Rays, for ought I know, is not determined with any abſolute Certainty.

But as moſt of our Knowledge of Nature conſiſts in our being able to aſſign ſome remoter Cauſes, and a few Effect of things, in ſome groſs Manner, rather than in an intimate Acquaintance with their Eſſences; So after the ſame manner we may be able to go ſome Length in this Diſquiſition, towards finding out the remoter Cauſe of Colour in the Juice of *Plants*, tho' we cannot point out the minute Figures in the Particles of that Fluid, which may immediately produce this Effect.

Thus then the Bloſſoms and Fruit produced according to the Nature of the ingrafted Branch, and not of the Stock of a different Kind, do ſhew that the circulating Juice of *Vegetables* is alterable by the Mould of the Veſſels through which it paſſes, ſo as to be forced by them to put on a different Colour and Taſte from what it had before it entred them; and we find this equally true in Animals.

There's only ſome, and thoſe very few, Exceptions of Juices in Plants, and common Salt in Animals, which ſeem to be inconquerable by the Power of their Veſſels, ſo as to be able to paſs through them, and circulate for ſome time, without any ſenſible Alteration. The Chymical *Analaſis* of the

Blood, Urine, *&c.* of ſuch Animals as uſe common Salt in their Food, having diſcovered it unaltered in any of its Qualities, after many Circulations in the Animal Body: And by your own Experiment, mention'd *Cap* I. *Part* I. of your *New Improvements of Planting and Gardening*, and Mr. *Furber*'s, *Cap.* II. *Sect.* 1. of the ſame Works; by theſe Experiments I ſay it appears, that ſome Juices are ſo far from being liable to ſuffer any Alteration by the Veſſels of the *Plant* in which they circulate, that they rather ſeem to have the Power of altering the natural Frame and Texture of the Veſſels themſelves, and of making a very laſting preternatural Impreſſion upon them, by which they become capable afterward of moulding and framing their Juice to a different Colour from what it had naturally, and before the Experiment; elſe it would be very difficult to conceive how ſuch a ſmall Quantity of Juice, communicated from a ſingle Bud of yellow ſtrip'd *Jaſmin*, inoculated upon a Branch of a plain *Jaſmin-Tree*, ſhould in three Months time (ſuppoſing it ſelf to periſh as the Experiment allows immediately after that time) be able to occaſion ſuch an Alteration of the natural Juice of the whole Tree, to the Colour of the Bud inoculated, continually through all the ſucceeding Years of that Tree's Duration; for ſuch a durable Effect muſt have a permanent

Cauſe, but that cannot be found in the fluctuating Juice, which is daily waſted and renewed, but muſt be owing to ſome Alteration in the Figure or Diameters of the Veſſels, which may be ſuppos'd to continue the ſame for many Years after, unleſs ſome new Alteration be induſtriouſly, or by ſome uncommon Accident wrought upon them: The Concluſion to be drawn from Mr. *Furber*'s Experiment will be much the ſame.

But Inſtances of this kind being very rare, we are only to regard the common Courſe of Nature, which has made theſe circulating Juices generally alterable by the Power of the *Solids* or containing *Veſſels*, both in *Plants* and *Animals*. Thus the Juices do ſeem to get and retain their ſeveral natural Colours from the *Solids*, ſo long as they continue in a due Courſe of Circulation through them.—— But when the Circulation, for whatſoever Cauſe, begins to fail or become languid, there ſeems to be yet another poſſible Cauſe of Colour in *Plants*, to wit, of thoſe preternatural Colours or Variegations, ſubſequent to a Defect of Nouriſhment, or a Wound or Bruiſe in any of their Parts: In all which Caſes, the Circulation and concurring Energy of the Veſſels are languid, and therefore a Degree of Stagnation enſues: And as every Stagnation of a vegetable Juice is attended with a proportionable Degree of Fermentation, and Fermentation is productive of conſiderable Alterations, both in the Taſte and Colour of the fermenting Juice, it may not be altogether improbable, that, in the Caſes mentioned, the Variation of Colour may proceed from certain Degrees of Fermentation in the Juice; tho' I only advance this as a probable Conjecture, and not what I can from any Experiment demonſtrate.

However, to render this Conjecture ſomewhat probable, we are to conſider, that the conſtant natural Tendency of all recent vegetable Juices is to Fermentation, which commences ſo ſoon as they are left to themſelves, or delivered from a progreſſive local Motion of the whole Maſs: This appears in the expreſſed Juice of the *Grape*, and of all *Fruits*, and in *Malt Liquors*, which from the Beginning are in a few Days carried to the height of Fermentation, in which time they acquire, firſt a ſweetiſh, and afterwards a vinous Taſte; and by a ſecond Fermentation (which in the weakeſt of them happens very ſoon after the firſt) become Vinegar or ſour; their Colour at the ſame time becoming leſs ſaturated, more tranſparent, leſs opaque. But this is yet more remakable in the Juice of high-coloured Flowers, as of the *Clove July-Flowers*, *Corn-Poppy* and *Violet*; all which Juices are apt to ferment in ſome little time after Expreſſion, and in the Fermentation ſenſibly loſe a good deal of their Colour, become paler, and more tranſparent: Indeed the *Violet* Juice loſes almoſt entirely its Colour in Fermentation, The ſame Fermentation happens to the Juice of *Vegetables* yet contain'd in their *Veſſels*, and enjoying ſome low Degree of irregular Circulation, as appears by *Herbs*, *Graſs*, *Hay*, *Flowers*, *Fruit*, *&c.* cut down and thrown together in a Heap, where all the Signs of Fermentation do very ſoon appear; ſuch as *Heat*, *Sweating*, change of *Smell*, *Taſte* and *Colour*; ſo that it ſeems plain, that Fermentation in all its Effects, takes place in the vegetable Juices, ſo ſoon and as far as the Circulation declines: Theſe two different Powers, or Operations of Nature, being ſo contrary to one another, that they cannot ſubſiſt together in Perfection; but like the oppoſite Weight in the Scales of a Ballance, as the one proponderates, the other muſt give way. And indeed the Caſe in Animals is very near parallel to this, if we ſubſtitute Putrefaction in them to Fermentation in *Vegetables*; for in thoſe we find, that the Blood in a bruiſed Part degenerates from its natural Colour by Stagnation, into a Livid, Blue, Green and Yellow (all Signs of Putrefaction) ſucceſſively, until the Re-abſorption be perfected, and the Circulation reſtored.——This is farther illuſtrated by the common Practice of ripening green Fruit in Straw, or in a moderate Warmth, where Evaporation of the Juice and Deſication may be avoided; which ſhows that the change of Taſte and Colour, can be owing to nothing elſe here than a certain ſlow degree of Fermentation, entertain'd by that Artifice in the Juice contained within the Veſſel or Veſicles of the Fruit: Was there indeed a free and open Communication with the external Air, this Fermentation would go on to produce the ſame Effects more quicker, as we ſee in the ſame Juice expreſſed: And as all Experiments in Fermentation do ſhew, that either a total Stagnation, or ſome degree of it, and Heat, are neceſſary to produce Fermentation in vegetable Juices, the Autumn affording us a ſlow Circulation of the Juices, and an increaſed Heat; theſe two concurring muſt needs produce that degree of Fermentation, to which we owe the ripeneſs of our growing Fruits, and the change of their Colours and Taſte in that declining Seaſon; as we owe the ripeneſs of our Liquors more remarkably to the very ſame Cauſes: And was it poſſible there ſhould be a perpetual Spring, that is, a continued equal brisk Circulation of the Juices, with ſuch a low degree of Heat as that Seaſon affords, it would be equally impoſſible to produce ripe Fruit; becauſe the two Pre-requiſites of Fermentation wou'd be wanting in Nature, tho' Art might in ſome meaſure ſupply that Defect.

The Concluſion then ſeems to be this, That Circulation and Fermentation are the two only Powers in Nature which can produce the Variety of Colours, and the other Changes we obſerve in Vegetables; as Circulation and Putrefaction are the two Powers that work the various Changes in Animals: And that as the due degree of Circulation in either declines, or is impair'd, Fermentation or Putrefaction takes place reſpectively, exhibiting the Signs of Diſeaſes or Decay, of which themſelves are the immediate Cauſes.

If I rightly remember, ſomething was mentioned in our Converſation concerning the different Strength of the coloured Rays of the *Sun*, and whether the Reflection of theſe ſtronger or weaker Rays might not depend upon a ſuitable Strength and Weakneſs in the Texture of the *Plant* or *Flower*; as if the ſtrongeſt Rays, which are the Red, being reflected by a red *Flower*, might not argue a greater Strength in the Texture of that Flower, or its Juices, than is in the Blue *Flowers*, which Reflect only the Blue, to wit the weaker Rays of the *Sun*.

If we may judge of the Strength of the Rays of the *Sun*, by their different degrees of Refraction in paſſing through a *Priſm*; as their Refraction increaſeth, ſo their Strength de-

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Single and *Double Flowers*, are eſteem'd more tender, and ſhould be houſed with the *Orange-Trees*; all theſe bloſſom in *July* and *Auguſt*, and are propagated like the Firſt; they love a medium Soil, without Mixture, and moderate Watering: See the Figures of the two laſt in the *Hortus Lugd. Bat.*

The *Adhatoda Zeylanenſium*, call'd by our *Gardeners* the *Malabar-Nut*, is very apt to bloſſom with us, but has not yet, as far as I can learn, produced any ripe Fruit in *England*; it makes a large *Plant*, and is pretty hardy, and is an extravagant Lover of Water: The Earth ſhould be the ſame as for the *Oleander*, and the Pots large; for theſe Trees encreaſe prodigiouſly in their Roots, which ſhould be prun'd every *Auguſt*, and freſh Earth put to them: This is increas'd from Cuttings planted in *May*, which ſtrike Root very eaſily in the natural Ground; it muſt be houſed with the *Orange-Tree*. There is a good Cut of this *Plant* in the *Hortus Lugd. Bat.*

The *Leonurus* is a *Plant* of the *Cape* of *Good-Hope*, named by *Breinius*; it is of the Species of the *Sideritis* or *Iron-Wort*, in which Tribe Mr. *Ray* has placed it: We have two Sorts, one with Leaves like *Hemp*, and the other with round notch'd Leaves like thoſe of the *Lamium*, or *Dead-Nettle*; the Flowers of both Kinds are alike, of an and in every reſpect ſhould be t

Malabar-Nut.

The *Amomum Plinii*, or *Tree* is a pretty Shrub, eaſily pro from *Seeds* or *Cuttings*, whic into the natural Ground in *Ma* are ſomewhat like *Cherries*, a after the *Plant* is brought in and remain upon the *Plant* all call'd by ſome therefore, the which is the moſt common N *ture* is the ſame with the fo only to make it bear Fruit plen be brought out of the Ho *Myrtle*; and during the *Summe* in ſome place defended from conſtantly ſupply'd with Wate not bear any Fruit if it be ſet It is ſo hardy, that I believe arm'd with *Spines*; the Flowers are of a deep Purple, and the Fruit before they ripen variegated with White and Green; and being fully mature, are as large as ordinary *Golden-Pippins*, and of a bright yellow Colour; theſe Fruits ripen in the *Winter*, and contain many ſmall Seeds, like thoſe of the *Capſicum Indicum*, or what we call *Guiney-Pepper*; they may be ſown in *March* or *April* upon Hot-Beds, and will bear Fruit the ſecond Year: Give this *Plant* the ſame Earth as the *Orange-Tree*, and houſe it at the ſame Seaſon: This, like all other potted *Plants*, muſt have freſh Earth every Spring and Autumn. Beſides this, we have another Kind, whoſe Leaves are ſhaped like thoſe of the *Oak*, but are ſo hoary that they ſeem to be made of white Woollen-Cloth; this Sort bears ſmaller Fruit than the other of a Golden Colour, which alſo ripen in the *Winter*; it requires the ſame Management as the former Kinds.

The *Caper* has been propagated with great Care in our *Green-Houſes* to very little purpoſe: Where the greateſt Induſtry has been uſed, it has hardly been brought to flower in *England*; and tho' it has had the Advantage of the beſt Stoves, it has been ſubject to die in the *Winter*, which has given Occaſion to ſome *Gardeners* to believe it was too tender for this Climate; but that Notion is unſeaſonable, ſince we know the *Caper*

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the *Seeds* in *March*, whi

the *South*; from *Muſcovy* or *Greenland*, or under the *Line*. I am of opinion it would be as hard to keep an *Iceland* Plant with us, as one that grew immediately under the *Line*; for as the one is naturally maintain'd by exceſſive Cold, ſo is the other by extream Heat. I imagine that the greateſt Cold of our *Winters* is near the ſame with the Temper of Air in the *Summers* of thoſe Countries, lying in ſeventy or ſeventy five Degrees of Latitude; and if ſo, then the *Plants* from thoſe frozen Parts of the World could only be made to grow with us in our colder Seaſons, when perhaps they would not be naturally inclin'd to ſhoot, for then the Sun would be far diſtant from their native Country, which would be the time of their *Winter*; and if we could make them ſhoot at that time by our natural Temper of Air, the Heat of our *Summers* would afterward ſcorch them to death, or ſmother 'em, unleſs they were to be kept in *Ice-Houſes* during the Seaſon of our warm Weather, and not expos'd abroad 'till our Froſts began: For if we are to follow Nature in the *Culture* of *Plants* from hot Countries, we muſt do the ſame in the Management of thoſe from the frozen *Zone*; we muſt imitate the Heat of one, and the Cold of the other.

Let us not therefore miſtake, in ſuppoſing that the ſame Degree of the Sun's Heat, and the ſame Temperature of Air, which is na-

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that the colder Climes abound with *Moſſes*, which are ſtill larger and in greater Quantities, as we go more towards the *North*; and they that ſerve for Food for the *Rane Deer* in the *North* Parts of *Muſcovy*. I remember once to have ſeen a *Plant* brought from about *Norway*, which grew in ſixty five or ſixty ſix Degrees, that budded out in *December*, and continu'd growing 'till the following *March*; but after that I am not well aſſured what became of it: But 'tis time now that I return to the *Culture* of thoſe *Plants* I undertook to treat of in this *Chapter*. Beſides the *Caper* already mention'd, we have two other Kinds, that with the ſmall yellow Flower, and the *Bean Caper*, they are both raiſed from Seeds ſown in *March* in ſandy Soil; the firſt requires the *Green-Houſe* in the *Winter*, but the other will thrive very well in an open Border, as I've ſeen it do in the *Amſterdam Garden*, altho' it is commonly houſed with great Care in *England*.

I have ſeen many Sorts of *Acacia* clutivated in the *Amſterdam Gardens*; and I remember formerly three or four Sorts of them were growing among the Rarities at *Hampton-Court*; but at preſent we have few of them in *England*, unleſs it be the *Virginian Kind*, which grows to a large Tree, and will ſtand abroad without Shelter in the *Winter*; as we may ſee ſome of them now growing in the Court before *Ruſſel-Houſe*, *Bloomsbury*, and in the Old Palace Yard, *Weſtminſter*; a plain Proof we might eaſily naturalize the *Virginian* Plants to our Climate. The Leaves of this, and other *Acacia*'s, are not unlike thoſe of the *Tare* or *Vetch*, and differ from one another chiefly by being larger or ſmaller, and not in their Shape: Some again are vary'd from the reſt by having large Spines or Thorns growing upon the Foot-Stalks of the Leaves, ſometimes as large as Cock-Spurs, and the Flowers of ſome of them are ſweet-ſcented; theſe, as they come from ſeveral Parts of the World, ſhould be conſider'd in relation to the Heat neceſſary for them; but they all, ſo far as I yet have obſerv'd, love a dry ſandy Soil, and little Water.

The *Apocinum*, or *Dogs-Bane*, has many Varieties; ſome growing upright like little Trees, and others climbing and creeping on the Ground like the *Woodbind*: The Flowers in their Shape are not much unlike thoſe of the *Amomum Plinii*, but have their Petals turn'd more back; their Colours are various: Theſe all bear Cods, for the moſt part ſhaped like thoſe of the long *Guiney Pepper*, but their outſides commonly cover'd with long tender Spines of the ſame Colour with themſelves; within them are the Seeds lying as it were in a Bed of Cotton, ſome of which adheres to each of them; from the Seeds we may propagate them with eaſe, by ſowing

ing them in *March* on *Hot Beds*, or elſe raiſe every ſort I have yet try'd, from Cuttings in the ſame Month, unleſs they be ſuch as have tuberous Roots, which muſt then be parted; and ſome indeed which die to the Root every Winter, will be better increaſed from *Off-ſets* taken from the Roots: I give them commonly a light natural Soil, which I find agrees well with them, and little Water, for they are all very milky, and apt to rot with much Wet. As to their Shelter in the *Winter*, it may be given them according to the different Climates they come from, and be ſet into the Houſe ſooner or later, as they are more or leſs tender.

We have two Sorts of the *Canna Indica*, or *Indian Cane*; one with plain green *Leaves*, and the other with variegated *Leaves*; they both flower in the Autumn, producing Spikes of ſcarlet Bloſſoms extreamly beautiful: The firſt is raiſed from Seeds ſown in *March* upon a *Hot Bed*, and may be increas'd by parting the Roots in the ſame Month; and ſo the ſtrip'd ſort alſo is propagated by *Off-ſets*; for the *Seeds* of the ſtrip'd Kind, which often ripen in *England*, will produce Plants with plain Leaves: They delight in a ſandy Soil, and little Water, and muſt be houſed with the *Orange-Tree.*

Of the *Geniſta* we have ſeveral ſorts, which are cultivated in *Green-Houſes*; they all love a ſandy dry Soil, and are always propagated from *Seeds*, for *Cuttings* will not take Root, neither do I believe *Layers* will ſucceed any better; as moſt of them have few ſpongy or parenchimous Parts, they require little Water, and ſhould be houſed according to their Climates.

The *Palm* or *Date-Trees*, are only propagated by ſetting the *Date-Stones* in light Earth in *March*, and giving them the aſſiſtance of a *Hot Bed*; they are indeed ſlow Growers, but indifferently hardy; they grow in *Italy* without any Shelter, and I believe might be brought to ſtand abroad in *England*, after giving them Shelter for the three or four firſt Years.

The *Jalop-Tree* of *Carolina*, call'd in *Virginia*, *Poke*, is a Plant that dies to the Root every *Winter*, and riſes again in the Spring to the Height of eight or ten Foot, having many Branches of a red Colour, the Leaves ſmooth and of a pleaſant Green; the Berries are like *Elder-Berries*, but grow in long Bunches ſomewhat like *Grapes*; theſe are uſed for dying Red; the young Tops are pleaſant and wholſome when they are well boiled, and are frequently eaten by the People of *Virginia*; but if we gather them too old they purge and vomit violently: The *Pidgeon* and other Birds are very greedy of the *Berries* of this *Plant*; a *Drachm* of the Root dry'd and powder'd (ſays my Correſpondent) is a very ſafe and good Purge, very much like *Jalop*, and is frequently uſed by the *Indians*; this is rais'd from the Berries ſown early in the Spring on a *Hot-Bed*, and delights in a rich warm Soil; it ſhould be houſed with the *Orange*.

The *Pitchumon*, or *Perſimon-Plum*, call'd by the *Indians Puchimon*, is a *Plant* of *Virginia*, where it grows to the Size of a common- *Cherry-Tree*; the Wood is white, and the Leaves very green and ſhining on the upper Side; the Fruit ſomewhat like a *Medlar*, with ſeveral Seeds in it; when it is ripe is ſoft and luſhious: This *Plant* may be propagated by ſowing the *Seeds* in *March*, like the former. It loves a light Soil, and little Water, and may be houſed with the foregoing Plant.

The *Side-Saddle Flower*, is a *Plant* growing in *Virginia* and *Carolina*, which according to the Deſcription I have had of it, with its *Seeds* which I have receiv'd from ſeveral Hands this Spring, is one of the moſt ſurprizing Plants of thoſe Countries; it dies every Year to the Root, and riſes afreſh every Spring, putting forth at that time a yellow Flower upon a ſlender Foot-Stalk with ſix Leaves, ſhaped ſomewhat like thoſe of the *Flower-de-luce* upon the top of the Stile grows a ſort of Canopy, round on the Top like the Seat of a Side-Saddle, under which is the Seed-Veſſel, divided into ſix

Cells; the Plant follows the Flower, growing about a Foot high, and ſomewhat ſhaped like a *Trumpet*; upon the Top of which is a Leaf like the Lid of a *Can*, which is, at the firſt coming up very green, but afterwards becomes yellow, full of purple Veins; this grows in ſpongy Ground in watery Places, ſo that it muſt be ſown in Pots of Earth, as nearly imitating Bogs as can be, and ſet upon *Hot Beds*, minding to refreſh the Earth conſtantly with Water as it begins to dry; houſe this with the foregoing Plant.

Virginian Dog-Wood makes a Tree about the Size of the common *Cherry-Tree*, bloſſoming early in the Spring; the Flowers are white, growing in Branches, and are ſucceeded by red Berries, which hang a long time upon the Tree: Sow them in Pots of light Earth in Autumn, and let them ſtand the *Winter* in the *Green-Houſe*, giving them the aſſiſtance of a *Hot Bed* the following Spring. The *Indians* boil the Roots of this Plant in Water, which they account good to heal Wounds.

The *Saſſafras-Tree* is alſo a *Plant* of *Virginia*, whoſe Figure we may ſee in *Gerbard's Herbal*, but the Deſcription is imperfect: It loſes its Leaves in the Winter, and in the Spring puts forth its Flowers of a yellow Colour in Cluſters, ſucceeded by blue Berries, ſomewhat like thoſe of the *Lauruſtinus*, upon red Foot-ſtalks: Theſe Berries ſhould be ſown at Autum like thoſe of the foregoing Plant; it loves a light Soil, and I believe it might be made to grow in our Woods, after it is a little harden'd and uſed to our Climate.

The *Virginia Wild Crab-Tree* has Bloſſoms ſomewhat like the *Apple*, but very pleaſant to the Smell; it bears ſmall Fruit, of a yellowiſh Colour, and well ſcented, which the *Indians* preſerve in *Sugar:* This is raiſed from Seeds ſown in *March* upon *Hot Beds*, and loves a light dry Soil; houſe it with the others of this Country 'till it becomes hardy enough to be planted abroad.

The *Virginia Myrtle*, or *Candle-Berry Tree*, is Ever-green, and Aromatick; it bears Berries about the Size of a ſmall *Vetch*, from which is drawn the *Green Wax* which *Candles* are made of: This *Wax* partakes ſo much of the natural Scent of the *Plant*, that the leaſt Bit of it being burnt upon Coals will perfume a whole Room. The Berries muſt be ſown at Autumn in Pots of black ſandy Earth, and kept continually moiſt, as well before they ſprout, as after they come up; let this be houſed with the foregoing Plant.

It would be endleſs to enumerate the ſeveral Trees and Shrubs of foreign Countries that are propagated in *Green-Houſes*; and I doubt not but ſuch as will mind the foregoing Directions in this Chapter, will eaſily, from Experience, diſcover the right *Culture* of whatever *Plants* they get into their Collection. In the mean time I ſhall proceed to lay down the beſt Methods of treating ſuch kinds of Plants as abound in Juice, and are called *Succulent Plants.*

CHAP. V.

Of ALOES, TORCH-THISTLES, MELON-THISTLES, FIG-MARYGOLD, HOUSE-LEEKS, *the* EUPHORBIUM, *and other* Succulent Exotick Plants, *their* Culture.

THE *Plants* which I deſign to treat of in this Chapter are commonly ſtiled *Succulent*, for that they are plump and full of Juice, which they chiefly gather from the Air, as by Experience we find, witneſs the *Sempervive*, a kind of *Aloe*, which will live ſome Years without Earth or Water, being hung up in a Room, and the *Sedum Arboreſcens*, which I have known to be kept after the ſame manner for many Years; in which *Plant* it is obſervable, that againſt Rain it puts forth Roots or little Fibres ſtriking into the Air, which in damp Seaſons is thick enough to afford it that Help, and ſome Nouriſhment; but as ſoon as the Air begins to grow thinner, and is more rarified, thoſe Roots dry up before they can provide themſelves with Nouriſhment ſufficient to ſupply the Plant they ſpring from, which perhaps they would do, if they could enjoy that thicken'd Air three or four Months without Alteration.

The firſt Kind of *Succulent Plants* I ſhall mention, is the *Aloe*, which in my Opinion is the moſt beautiful Tribe of *Plants* belonging to the *Green-Houſe*. The moſt common Kind in our *Gardens*, with ſome few other ſorts, are brought from *America*; but the greateſt Varieties of them, and I think the beſt Kinds, come from *Africa*, chiefly from the *Cape* of *Good Hope*. *Aloes*, for the moſt Part, are compos'd of many Succulent Leaves, long and ſharp at their Points, commonly arm'd with *Spines*: The Leaves ſpring immediately from the Root, and are placed in a Round, repreſenting the Rays of the Sun; from their Center ſhoots forth the Flower *Stem*, which ſometimes divides it ſelf into Branches, but not always: Upon theſe *Stems* appear the Flowers which are *monopetalous*, but oftentimes are ſo deeply cut on the Edges, that without ſtrict Examination they appear to have ſix *Petals*; they are the moſt like the Flowers of the *Hyacinth* in their Figure, but are ſeldom ſweet-ſcented, and each Fruit has little black Seeds in it, lodged in three ſeparate *Cells*.

Some *Aloes* are arboreſcent, inclining to make large Trees, breaking forth into Branches; as one ſort which has Leaves ſomewhat ſhaped like thoſe of a *Narciſſus*, but larger, more ſucculent, and of a whitiſh Colour; but this is ſo rare, that I know not of any Plant of it in *England*, but what I brought with me from abroad, and have now growing. We have other Kinds, which are ſo ſmall, that a whole Plant does not exceed the bigneſs of a Crown-piece; ſome grow cloſe to the Ground, others are more aſpiring, and have their Crown of Leaves raiſed upon a Stem ſomewhat above the Earth: In ſhort, they are ſurpriſingly different from one another, and deſerve our Care and Admiration as much as any Plant whatever.

I have ſeen about ſixty different Kinds of *Aloes* in the *Phyſick Garden* of *Amſterdam*, chiefly the Product of the *Cape of Good-Hope*; ſome of them have been raiſed from *Seeds* from that Place, and others from young *Plants* riſing from the Roots, or putting forth from the *Stems*; theſe are uſed with great Tenderneſs in *Holland*; but I find they are as hardy as any other Plant growing about the *Cape*; for of the forty Sorts, which I have cultivated for the three laſt Years, I have not loſt one by Cold, but I find it is Wet chiefly that injures them. In *Africa* they all grow in Stony Places, and upon Rocky Ground; therefore the Earth I prepare for them is one half ſandy Soil, and the other Rubbiſh of old Walls well ſifted and mixed together, which contributes to keep them from rotting at the Roots; and in Planting them, I obſerve always to ſet them very ſhallow in the Pots, raiſing the Earth in that manner, that the *Plant* ſtands as it were upon a Hill, falling every way to the edge of the Pot; ſo that when they require any Water, it may be given them without touching any Part of the Plant; which if it ſhould ſo happen, unleſs the Sun immediately dries it up, the Plant would be in danger of rotting.

In the *Summer* indeed, when they are abroad, a little Rain will not hurt them, becauſe they then cannot remain wet very long, otherwiſe the Wet that will infallibly ſettle in the Heart of the Plants when the Rain falls upon them, would deſtroy 'em: I therefore chuſe to keep them in the Houſe 'till *June*, and return them thither from abroad in *Auguſt*, to avoid the Danger of too much Moiſture, which they can hardly meet with between thoſe Months.

While they are abroad, if the Weather be fair, they will require moderate Waterings once a Week, if their Earth is very dry: And from the time of their Houſing, 'till the middle of *October*, gentle Refreſhings may be given them in the Mornings, while the Sun is upon them, for then is the time of their Growth: But from *October* to the middle of *March*, or thereabouts, they muſt be kept very dry, and not have the leaſt Moiſture, tho' the Earth be like Powder; for they cannot diſpenſe with any wet till the Sun begins to grow powerful with us, and can dry it immediately. In *May* give them freſh Earth and they may be tranſplanted at that Seaſon, but without diſturbing the Roots: But the beſt time of the Year for that Work is the beginning of *Auguſt*, when they will beſt be diſpoſed to make freſh Roots; and this muſt be done about ten Days before they are ſet into the Houſe, for the open Air helps them to ſtrike the Roots, as I ſhall endeavour to prove.

I once had ſome Off-ſets and Branches of *Aloes* ſent me in *May*, without any Roots; and after having let them lie in the Sun for three or four Days, to dry and heal the wounded Parts, I put them in *Hot Beds*, according to the uſual Method; but with all the Art I could uſe to them, I found they ſenſibly declin'd, till at laſt they were reduced almoſt to nothing; I then ſo far diſpair'd of ſaving them, finding the Summer almoſt paſt, that in the beginning of *Auguſt* I flung them out of my *Garden* careleſly, with ſome other things that had ſuffer'd in the ſame manner; but to my great Surpriſe, after they had lain abroad about three Weeks, they ſtruck Roots into the Ground they lay upon, and began to ſhoot out freſh Leaves: By this Accident I not only ſaved the *Plants*, but took ſuch Methods for the Management of others of the like Kind, that now I do not know any Plants in better Health than my own; and I find the beſt Seaſon for Planting the Off-ſets of *Aloes* is about the middle of *July*, letting them ſtand abroad about ten Days, and take the Rain if poſſible; when they begin to ſtrike Root, then they may be help'd with a *Hot Bed*, but not before. The Seeds of many Sorts ripen in *England*, and may be ſown upon *Hot Beds* in *April*.

I obſerve that ſuch *Aloes* as put out their Off-ſets above Ground, *i. e.* from the ſide of their Stems, may be made to ſet out thoſe young Shoots for Increaſe, by taking away ſome of the under Leaves which grow next the Earth; for from thoſe places where the Leaves are grown, will always ſhoot forth young *Aloes*; but this Work ſhould be carefully done without bruiſing the Stem or other Leaves, and at ſuch a time in the *Summer*, when the *Sun* is in its greateſt force: For altho' the Leaves will eaſily peel from the Body of the Plant without breaking, yet there will be a Moiſture remaining about the Part they were join'd to, which would breed Moldineſs, and be apt to rot if it was not quickly dry'd up.

This and all other *ſucculent Plants* are ſo ſenſible of the leaſt Bruiſe, that I have known many die by that Accident; to pinch one ſingle Leaf will mortifie a whole *Plant*, unleſs the bruiſed Part be preſently cut off.

We may ſee the Figures of many kinds of *Aloes* in Dr. *Comelin*'s curious Books of *Plants*; many of which He has given us, with their *Flowers*, and are extreamly well deſign'd. The more hardy this kind of Plant is kept, the more apt it is to flower, which I know from Experience, having not leſs than twelve Sorts, which bloſſom with me every Year.

The *Torch Thiſtle*, or *Cereus*, is a *Plant* very different from any other *Tribe* of *Plants*, in that it never bears any Leaves. I have cultivated about ſeven Sorts of it, without reckoning thoſe other Kinds of *Torch*-like *Plants*, which have milky Juice, and are reckon'd of the *Euphorbium* Race. I do not yet find that any of the *Torch Thiſtles* grow in any other part of the World but in *America*; nor can I learn that the *Euphorbiums* are found any where naturally growing but in *Africa*. The *Torch Thiſtles* are of two Sorts; ſome creeping upon the Ground, and the others growing upright to a great Height without Support. The creeping Kinds are more enclining to branch than the others, and take Root eaſily as they run upon the Ground: The Branches of the creeping Kinds are differently ſhaped, in that one ſort pretty common in *England*, has triangular Branches, and the other has its Sprouts divided into ſix or ſeven Angles; both theſe have the Edges of their Angles adorn'd with ſmall tender Spines ſet together in the form of Stars: The Flowers of the firſt I have not yet ſeen, but the latter has bloſſom'd in *England*, which yet perhaps it would not have done without an Accident: A large *Plant* of it that ſtood in the Neighbourhood of a plaiſter'd Wall, ſtruck its Roots into it, and ſoon after dying at its firſt Root, it remain'd ſome time nouriſhed by the Wall only, and in that condition ſet for Flowering: The Bloſſoms were very large, radiated ſomewhat like the *Sun-Flower*; many of the *Petals* were of a yellow Colour, with ſome few,towards the middle, of a fair White. This Flower ſtood upon the Summit of the Fruit, like thoſe of the *Indian-Fig*; and when it opened was extreamly well ſcented, but ſoon decay'd. Whoever conſiders that this *Plant* grows naturally upon Rocks, will not wonder at its Flowering when it grew in Lime Morter, which comes the neareſt to a Rocky Soil of any we can compoſe.

I have therefore choſe to plant both theſe creeping Kinds of *Torch-Thiſtles* in Rubbiſh

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Summer, as much as you can give them; for 'tis what they chiefly feed upon, as we may know by their putting out of long *Fibres* from their Branches at ſuch Seaſons. This kind of Plant comes from thoſe Parts of *America* near the *Line*, therefore are not ſo hardy as *Aloes*, and ſhould be kept more in the Houſe, and ſet in the warmeſt Places.

The *Erect*, or *Upright Kinds*, have generally much larger Stems or Branches than the others, and the *Spines* upon their Edges very ſtrong, which are various in their Length and Colour, as the *Plants* they belong to are different; and the ſeveral Kinds of this *Plant* likewiſe differ in their Colour and Number of *Ribs* or *Angles*. The Upright Sorts, as I obſerve, never offer to put out any Branches, as long as their firſt Stem can preſerve its Top from damage; but as ſoon as that is crop'd or injur'd, then they commonly put forth freſh Shoots near the place where it was cut or broke off, about three or four in Number, which grow upright. Sometimes the *Great Upright Torch-Thiſtle* will continue growing in one Stem 'till it be near twenty Foot high, without putting out any Buds but thoſe for Bloſſoms: The Flowers are radiated with whitiſh *Petals*, which do not open 'till the Fruit upon which they ſtand, ſeems to be full grown. This Kind, as well as the others of this

Tribe, is eaſily raiſed from Cuttings planted in any of the *Summer* Months, but beſt in *May*, to cut a Stem of any of them into pieces of ſix or ſeven Inches long, and let them lie in the *Sun* 'till their Wounds are dry; every Cutting will ſoon take Root if they be ſet in Pots of light Earth, and kept pretty dry 'till they begin to ſhoot, and then ſome of the Mixture prepared for the Creeping Kinds ſhould be put to their Roots, and as much of the light Earth as poſſible taken away: The Reaſon why I do not chuſe to plant them in this Mixture at firſt, is, becauſe the Roots will more readily form themſelves in the other Earth. When theſe *Plants* begin to grow, they will put out little Buttons near their Tops, which will afterwards form ſo many Stems, excepting only that Cutting, which was the running Top of the *Plant*, and that will ſhoot upright. When the little Stems are about four or five Inches long, they may be cut; and after drying in the *Sun*, be planted like the others.

I can ſay no more concerning theſe Plants than I have done of the Creeping Kinds, unleſs it be, that what I call the *Great Upright Torch-Thiſtle* is eaſily preſerv'd in any *Green-Houſe*, and is not ſo hard to be kept as the others; that is, it will thrive better in a plain ſandy Soil than in the Mixture I have preſcrib'd for the others of this Tribe, and will bear more Water in the Summer. The

Figures of all theſe Kinds, I think, are no where cut but in my *Hiſtory of Succulent Plants.*

The *Melon-Thiſtle*, or *Echinomelocactos*, is a very wonderful Plant; I have had only two Sorts of it, *viz.* the large Kind growing in *St. Chriſtophers*, and other *Caribby Iſlands*, which is cut in *Gerard*'s *Herbal*; and the ſmall Kind, which is figured in the *Paradiſus Batavus*, named in that Book *Echinomelocactos minor Lacteſcens abſque tomento Cylindris Strictioribus.*

The firſt is a ſolid Plant, growing out of the Ground like the Fruit of a large *Pumkin*, but ribb'd like a *Melon*, and very green; upon the Edges of each Rib are long *Star*-like Thorns, placed one above another, of a *Coffee* Colour: On the Top of this *Melon*-like *Plant*, grows a large Lump of a *Cotton*-like Subſtance, cover'd over on the Outſide with ſhort tender *Spines* of a *Cinamon* Colour; out of this burſt forth the Fruit (in a hot Day) full ripe, about the Size and Colour of *Cornelian Cherries*, and commonly drop off two Hours afterward. There is now one of theſe *Plants* in the *Stove* at *Hampton-Court*; it is call'd in *Barbadoes*, *Popes-Head*, or *Turks-Cap*.

The other ſort ſeldom exceeds the Bigneſs of a large *Apple*, growing out of the Ground like a ſolid Fruit, and cover'd over with little Knots, ſomewhat reſembling green

Berberries ſet cloſe together, and little Stars of Thorns at their Points, of a *Cinamon* Colour; the Fruit of this, like the former, cracks out in hot Weather, full ripe, of the Shape and Colour of a ripe *Berberry*, but theſe remain upon the Plant a long time I could have been more particular about the Deſcription of theſe ſtrange Plants, but as they will be engraved and deſcribed in my third *Decade of Succulent Plants*, I ſhall therefore refer my Reader to that Account of them.

Theſe both grow upon Rocks in *America*, near the *Line*, ſo that they are very tender; but being humour'd in their way with a proper Soil, and kept dry, may be preſerv'd as well as the *Torch-Thiſtles*: I have raiſed the ſmall Kinds from Seeds ſown in *Lime*-Rubbiſh, which I afterwards preſerv'd for ſome time, but they were not hardy enough to reſiſt the hard *Winter*. The beſt way to provide our ſelves with theſe *Plants*, is to have them brought from *America* well grown and kept without Water during their Paſſage.

The *Indian-Fig*, or *Prickly-Pear*, is called *Opuntia*, and *Ficus Indica*; there are many different Kinds of this Plant chiefly growing in *America*, from whence I have had about eight or nine diſtinct Sorts: This Race of Plants are ſaid to grow one Leaf out of another, but they are rather Branches than

Leaves; the Leaves properly being thoſe little Buds which appear always on thoſe Parts where the Thorns afterward put forth. However, ſince what I take to be Branches have generally been called Leaves, I ſhall yet continue that Name to 'em. This Tribe of *Plants* then, differ chiefly from one another in the Size of their Leaves, the Colour of their Flowers and Fruit, and the Length and Colour of their Spines; the Leaves of all of them are generally of an Oval Figure; ſome Sorts have them near a Foot in Length; and others not more than two or three Inches; their Leaves are generally ſet with Knots of Thorns at certain Diſtances; ſome ſo very long, that the *Indians* make uſe of them as Pins: Others have the Thorns ſo ſhort, that they are hardly to be perceiv'd, and thoſe ſmall Thorns make the *Cow-Itch*, and can hardly be got out of ones Fleſh in a Month, if they are not carefully ſought after at firſt: In this Tribe the Fruit always appears before the Flower; and when it ſeems to be full grown, the Bloſſom opens at the End of it, with about ten *Petals* and a Cluſter of *Chives* in the middle: This Flower always opens in the Heat of the Day, and ſhuts up when the *Sun* leaves it: When the Fruit is ripe it is generally of a ſtrong red Colour, and has this Singularity in it, that if it be eaten, it will make the Urine of the Perſon as red as

Blood, but without any ill Effect; the Flowers are commonly Yellow, excepting one ſort, which bears Scarlet Bloſſoms, and is more tender, and hard to be kept than any of the others, and very apt to rot: Some of them delight to creep upon the Ground, others grow more upright; but all of them delight in Stoney Places and Rocks; therefore I give them Earth made with Lime-Rubbiſh and ſandy Soil in equal Quantities, planting them in Pots, as I do the *Aloes*, upon little Hills rais'd above the reſt of the Earth; they may for the moſt part be water'd like the *Torch-Thiſtles*, and ſhould have Warmth anſwerable to the Climates they come from. We have a ſmall Sort which comes from *Italy* with round Leaves, that will ſtand abroad all *Winter*, and bear Fruit plentifully; and the *Carolina* Kind, and the *Virginia* Sort, will likewiſe live out of Doors under the Shelter of a warm Wall; theſe are all raiſed by planting ſingle Leaves about two Inches deep in Pots of the prepared Earth, (after their Wounds are dry'd) and letting them ſtand abroad 'till they ſtrike Root, before they have the Help of a *Hot-Bed:* And I obſerve, to ſet them upon Leads, or ſome Stone Pavement, expos'd to the *Sun*, contributes to make them ſhoot with greater Vigour: The Plantations of the Leaves ſhould be made in the *Summer* Months, and they ſhould be houſed with the *Aloes*.

The *Ficoides* is a Plant ſo different from other Kinds, that Authors have greatly varied in the Name of it; ſome eſteem it like the *Criſanthemum*, or *Corn-Marygold*; others make it a Diminutive of the *Opuntia* or *Indian-Fig*; and indeed it has this likeneſs to the latter, that the Fruit is always form'd Before the Flower opens,and is not unlike a *Fig* in its Shape: The Flower is radiated ſomewhat like the *Marygold*, and therefore the *Engliſh* Name I give it in my *Decades* of *Succulent Plants*, is *Fig-Marygold*, which in my Opinion is a Name in our Language as proper for it as *Ficoides*; the Leaves of this *Plant* are always ſucculent, and it is rare to find one in this numerous Tribe that has not conjugated Leaves, that is, Leaves ſet on in Pairs at the Joynts.

In the *Culture* of fifty ſorts of this *Plant*, I do not remember to have met with one that was not a Native in *Africa*, chiefly about the *Cap* of *Good Hope*, from whence we receive them; they commonly grow in ſtoney or rocky Ground, in ſuch places where they have not much Wet, and are eaſily propagated either from *Seeds* or *Cuttings*: The *Seeds* may have the help of a moderate *Hot Bed*, if they are ſown early in the Spring; but the Cuttings being planted in a Natural Bed of Earth in *May* will proſper very well, and be fit to put into Pots the *Auguſt* following, in which Condition they may yet remain abroad till about the 20th of *September*, for they delight in the open Air, and are not eaſily overcome with ſmall Froſts. As to the time of their Duration, I find many of the Shrub Kinds require to be renewed every ſecond or third Year, and likewiſe the Running or Creeping Kinds; for *Plants* of three Years old often drop off; or if they live, are generally ill-ſhapen and ragged; it is practiſed in ſome places to raiſe theſe Cuttings upon a Bed made with *Tanners-Bark*, which is a Mixture that affords a gentle Heat for three or four Months, without ever burning; therefore it would be of great uſe to raiſe young *Orange-Trees* upon, or other ſmall Plants: Some Kinds of this *Plant* are *annual*, and therefore muſt be raiſed from Seeds every Year, as one Sort eſpecially, which of late has been pretty frequent among us; it has at firſt coming up, Leaves ſomewhat like thoſe of the *Arrow-Head*, cover'd with little Bliſters of clear Juice, which appear like ſo many Diamonds, and give a notable Luſtre when the *Sun* ſhines upon the *Plant*; but as this Plant grows bigger, the Leaves grow ſmaller and change their Figure; it puts out many Branches cover'd with tranſparent Bliſters, and Bloſſoms about *September*, bearing ſmall white Flowers; but this, like other *Annuals*, will ſtand the *Winter*, if we raiſe young Plants of it about *July* or *Auguſt*, that do not attempt to bloſſom in 3 or 4 Months. There is another Claſs of the *Fig-Marygold*, which are *Dwarfs* and *Aloe-form'd*, growing always near the Ground without branching; moſt of them will remain five or ſix Years without renewing, but may perhaps be ſubject to loſe ſome of their Leaves lying next the Earth, if the Surface of the Earth is not cover'd with ſifted Lime-Rubbiſh, which contributes to ſuck up the Wet, and keep the Leaves from rotting; theſe Dwarf-Kinds have commonly the moſt ſucculent Leaves, and thereford are more endanger'd by Wet than the others; ſo that I always plant them upon little Hills in the middle of the Pots, as I have adviſed for the *Aloes*; So likewiſe ſome of the Creeping Kinds, that have very ſucculent Leaves and tender Stalks, ſhould have the top of the Earth they run upon cover'd, with a thin Coat of Lime-Rubbiſh, or Sea-Coal Aſhes, to prevent their rotting by too much Wet: The Earth for every Kind of this Plant ſhould be light and ſandy, with about one fourth Part of Rubbiſh among it.

The *Shrub* Kinds, which have their Stalks woody, will bear moderate Waterings; but the others, which are more ſucculent, muſt have very little Water. This Tribe of *Plants* ſhould always have the Advantage of the Sun, for they will never open their Bloſſoms without it, excepting two Kinds which only flower in the Night. As I have already publiſh'd the Figures of many of theſe Plants, and am ſtill about engraving many more of them in the *Hiſtory of Succulent Plants*; ſo I ſhall refer my Reader to that Work for their particular Forms and Uſes; the *Cuttings* of theſe *Plants* ſhould not be planted before their wounded Parts are dry.

We have great Varieties of *Sedums*, or *Houſe-Leeks*, from the *Cape* of *Good Hope*, which are not leſs beautiful than the *Fig-Marygolds*, and are eaſily propagated by the ſame Means. Dr. *Commelin* has given us the Figures of ſeveral of them among his *Amſterdam Plants*, and therefore I ſhall ſay little relating to them; but the *Tree Kind*, or *Sedum Arboreſcens*, which is the largeſt of them, I cannot well paſs by, without taking notice of it, as one of the moſt beautiful *Plants* belonging to the *Green-Houſe*, eſpecially that ſort of it which has its Leaves variegated with Green and Yellow, and alſo has very often thoſeLeaves tip'd with Purple; it loves a light ſandy Soil, and is eaſily propagated from Branches ſet in the Earth in any of the *Summer* Months, giving them very little Water, and as much Air and Shade as poſſible in the *Summer*, and no Water at all in the *Winter*. I obſerve, the Method I preſcribe for them in the *Summer*,contributes to make them more beautiful in their Leaves than thoſe thoſe that are drawn under *Glaſſes*, or expoſed to the *Sun*, which is a common Error : In a word, every Plant that feeds upon the Air, as this does chiefly, muſt be treated in the ſame manner, if we have a mind to keep them in their beſt Colours ; for too much *Sun* to *Aloes*, and ſuch like *Plants*, is apt to change the Colour of their Leaves.

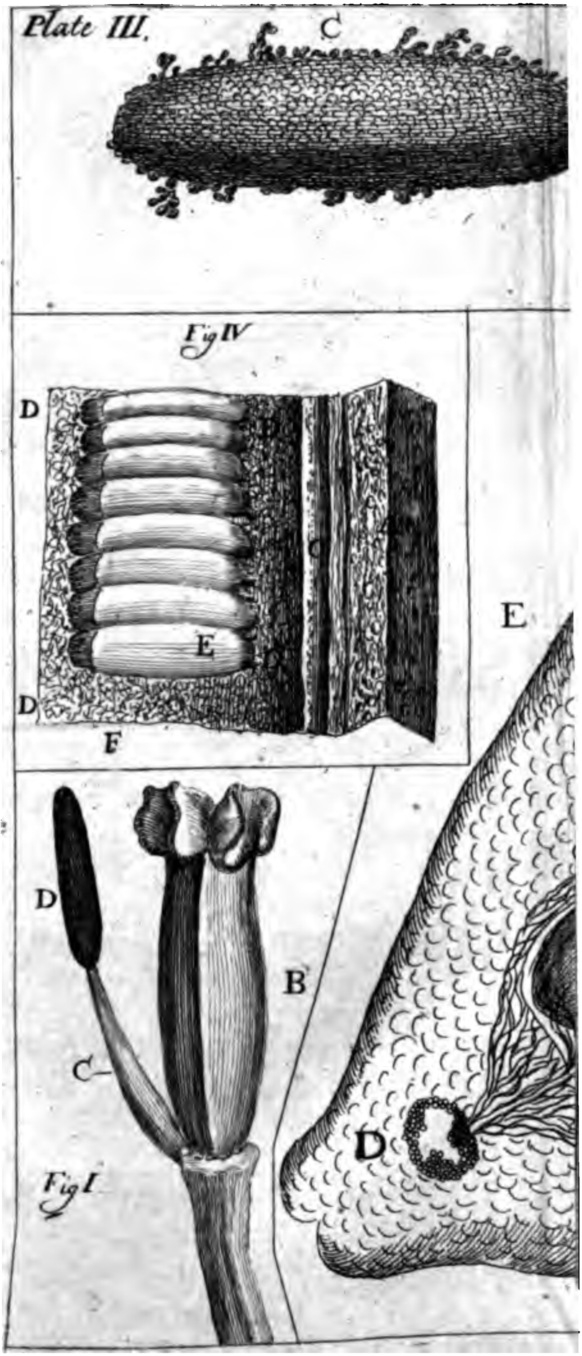
The greateſt Varieties of the *Euphorbium* that I have yet ſeen are in the *Amſterdam Gardens* ; they are in Shape and Manner of Growth very like the *Torch-Thiſtles*, but have not Star-like *Spines* ; however they do not want ſome Thorns to defend their Edges, which vary in their Figures as the Plants are different : All this Race abound in poiſonous milky Juice, which flows from them in great Abundance when thy are wounded ; ſo that the Cuttings taken from them for Increaſe, muſt be well dry'd in the Sun before they are put into the Earth. The Mixture which I direct for the *Torch-Thiſtles* is the moſt proper for this kind of Plant, which delight in rocky Soil, and requires very little Water ; theſe are moſt of them very tender, like the *Torch-Thiſtles*, and may be kept in the Houſe all the Year about, and ſtand in the warmeſt Place of it : We may raiſe them in any of the *Summer* Months with the Help of a *Hot Bed.*

The *Frittilaria Craſſa* is a ſmall Creeping Plant, imitating, in the manner of its Growth, the *Torch-Thiſtles*, ſhooting one Branch out of another: It has neither Spines nor Leaves that ever I could diſcern, but bears very large Flowers about four Inches over, ſpeckled with Black and Yellow, like the Belly of a *Toad*; and one Sort has it *Petals* cover'd over with purpliſh Hair or Wool: Theſe Flowers, when they open, have a very ungrateful Smell like *Carion*, and ſoon are cover'd with little *Inſects* about the Centre of their Bloſſoms. The Stems of the ſmalleſt Sort are generally of a browniſh Colour; but the larger Kind has its Stems very green, if the Plant be in Health: See the Figures of both theſe Kinds in the *Hort. Lugd. Bat.* and Dr. *Commelin*'s Book of *Amſterdam Plants*; We may eaſily propagate theſe Plants by planting their Branches in a Natural Bed of Earth, any time between *June* and *Auguſt*, and they will ſoon be fit to plant into Pots; the moſt proper Earth than for them, is that directed for the *Aloe*: Theſe *Plants* are very apt to rot, and therefore muſt be kept dry in the *Winter*, and have a warm Place in the *Green-Houſe*.

I have now given my Reader ſufficient Inſtructions for the propagating of *Exotick Plants*; and if he ſhould meet with other Kinds than thoſe I have mention'd, I doubt not but he may readily cultivate them, if he diſcreetly conſults the Directions I have given him in this Work.

CHAP.

Plate III.



CHAP. VI.

Of the GENERATION *of* PLANTS.

AS the *Generation* of *Plants* is yet new enough to the World to admit of a further Explaination than what I publiſhed in the Firſt Part of this Work, I ſhall therefore give my Reader the Figures of the Generative Parts of *Plants*, as I have obſerv'd them with the *Microſcope*.

Plate II. *Figure* I.

A The *Pedicile* or *Foot-ſtalk* of the *Tulip* Flower.

B The *Piſtillum* of the ſame.

C One of the *Stamina* taking Root in the *Pedicle* of the *Tulip*.

D the *Apex*, or Head of the *Stamen*, which encloſeth the *Farina Fœcundens*, or *Male-Seed*, in two Cells, which burſt open when they are ripe.

Fig. II. Shews the *Piſtillum* or *Uterus* of the *Tulip*, cut Horizontally and magnified with one of *Campani*'s *Microſcopes*.

A The Cavity of the *Vagina*; the *Tunick* of which Paſſage or Cavity is compoſed of very ſmall Veſſels, which are continued into the ſeveral Coats of the *Ovaries*, and the Eggs within them mark'd b b b b b b; all theſe Veſſels ſeem to take their Riſe from three larger Pipes, CCC, thorow which the Sap aſcends from the Root in Steam or Vapour.

D D D Shew three large Veſſels (whoſe Sap is in Figure of ſmall *Globules* of a bluiſh Colour) thorow theſe Veſſels the Sap deſcends in Liquor.

Theſe large Pipes put forth Branches of Veſſels about twenty times leſs than themſelves, which paſſing horizontally thorow the ſeveral *Ovaries*, are divided into ſmaller *Fibres*, and at length are loſt in the *Tunick* of the *Vagina*;——theſe are all of a pale blue Colour.

E E Direct to the fleſhy Part, which ſeems to be made up of many tranſparent Protuberances of a pale yellow Colour, leſſening themſelves as they come nearer to the outward Coat of the *Piſtulum*.

Fig. III. Shews the *Piſtillum* or *Uterus* of the *Tulip* ſplit lengthways at A, wherein are diſcover'd two of the *Ovaries* on each ſide the Paſſage of the *Vagina*.

B The *Apex* flinging out its Duſt which falls upon C the outward *Oſtium* of the *Uterus*, compoſed of ſpongy Folds, which emit a gummy Liquor.

D One of the *Petals*, or *Flower-Leaves*, taking Root on the *Pedicle*. *N. B.* This Figure is not magnified.

Fig. IV. Shews part of the *Piſtillum*, ſplit like that in the former Figure, but magnified.

A Is the the Cavity of the *Vagina*, into which the *Farina* is ſuppoſed to fall.

C Is the Paſſage of one of the Veſſels mark'd C in the ſecond Figure.

D D D D The Tunick of the *Ovary* compoſed of many ſmall Fibres.

E The Eggs as they are faſtened to the *Ovary*.

F A ſlender Fiber paſſing lengthways thorow the *Capſula*, and ſeemingly binding the Eggs together.

Fig. V. Is the *Matrix* of the ſingle *Anemone* ſurrounded with its *Stamina* and *Apices*; it is to be obſerved, the Eggs of this Flower are naked, ſtanding on the Outſide of a little Button rais'd in the middle of the Flower.

Fig. VI. The Button with the Eggs on its Outſide ſplit lengthways.

Fig. VII. A is a *Stamen* with its *Apex* of the *Anemone*, of its natural Size.

B One of the Eggs or Seeds of the ſame taken off from the Button.

Fig. VIII. The *Stamen*, with the *Apex* of the *Anemone* magnified.—— In this Figure, at A, we ſee the Root of the *Stamen.*

B B B B The length of the *Stamen*, from its Root to the *Apex*, whereby it appears to be a hollow Tube.

C The *Apex* cover'd with its *Farina.*

Fig. IX. Shews us one of the Seeds or Eggs of the *Anemone* magnified; whoſe outward Coat is cover'd with Capilary Veſſels, curl'd and running into one another, with a View of the Neck or Paſſage, into which the Male-duſt is ſuppoſed to fall.

So have I now compleated the Work I promis'd in my Title Page, and have endeavour'd to give ſomething new in every Part of the *Art of Gardening* which I have treated of.

FINIS.

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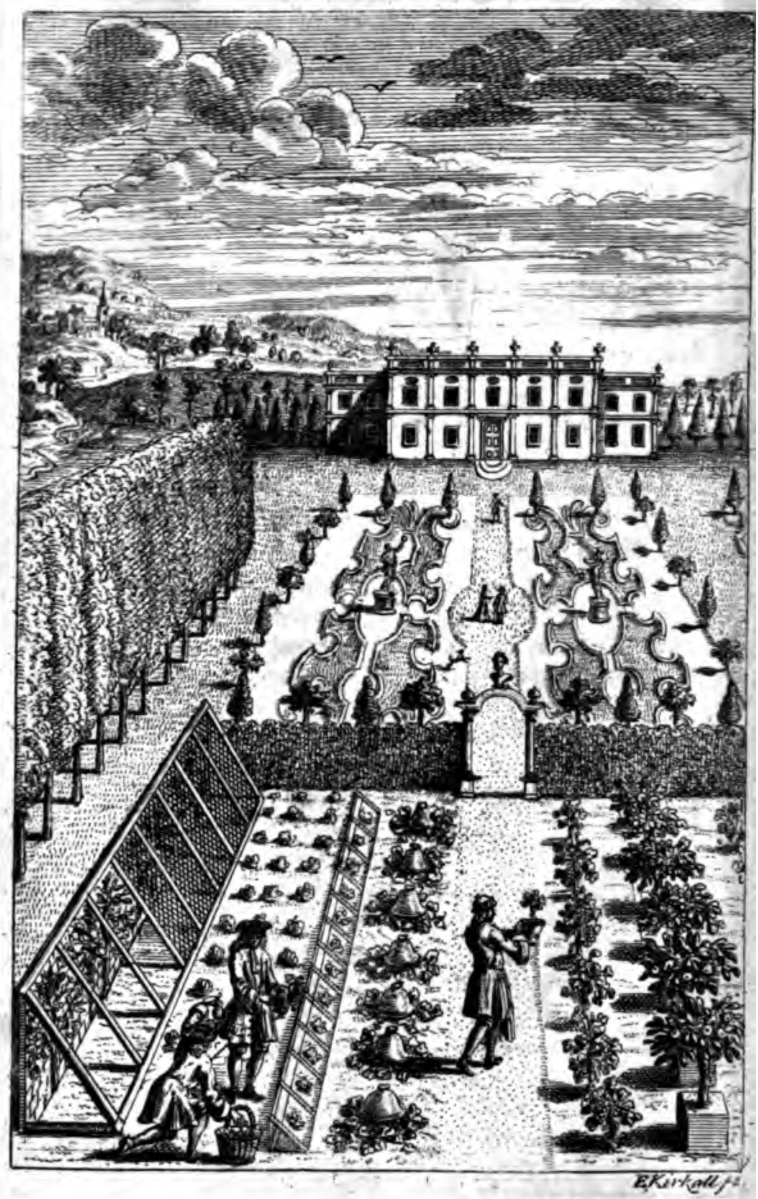

E. Kirkall fc.

THE
Gentleman and Gardeners
KALENDAR,

DIRECTING
What is neceſſary to be done every Month,
IN THE
KITCHEN-GARDEN, FRUIT-GARDEN,
NURSERY,
Management of FOREST-TREES,
GREEN-HOUSE and FLOWER-GARDEN.
WITH
DIRECTIONS for the Making and Ordering
HOP-GROUNDS.

By RICHARD BRADLEY, *F.R.S.*

To which is added,
The Deſign of a GREEN-HOUSE (finely Engrav'd) after a New Manner, contriv'd purpoſely for the good keeping of EXOTICK PLANTS, by Seignior *GALILEI* of *Florence.*

LONDON:
Printed for W. MEARS at the *Lamb* without
Temple-Bar. MDCCXVIII.

TO

ROBERT BALLE,

OF

Cambden-Houſe, Eſq;

FELLOW of the

ROYAL SOCIETY.

SIR,

As this Work contains many Obſervations and Experiments which have been made in your Curious

Gardens at *Cambden*-Houſe, they cannot properly appear in Publick under any Patronage but Yours.

The World, I am ſure, will approve the Choice I have made of a Patron, as it is ſo generally known how great an Encourager you are of every thing which looks towards the Good of your Country; and I am perſuaded, that whoever has once a right Notion of the Pleaſure and Profit of a Garden, will agree with your Opinion of it, That it produces more real Satisfaction in one Day, than all the faſhionable Diverſions of the Age will do throughout the whole Courſe of a Man's Life.

If Novelty engages the greateſt Part of the World, Where can we find it ſo ſoon as in a GARDEN, which affords us every Day ſome new Variety to gratify our Senſes, without running the Hazard of our Health and Treaſure, which are too frequently impaired by Pleaſures of other Kinds, ſought after by the Generality of Mankind?

I have therefore endeavour'd in the following Papers to *and Profit. It is my Deſire that every one may reap ſome Advantage from what I do, and I have therefore laid down the following Rules, in as plain and eaſie a Method as poſſible, ſo that the meaneſt Capacity may underſtand them; and if I have omitted any thing neceſſary to be ſet forth in ſuch a Work, it is rather the Effect of my little Leiſure, than for want of a willing Mind; but I am perſwaded the Omiſſions of that Kind, are not ſo numerous, but that they are over balanc'd with other Preſcriptions, which are not commonly known.*

My Deſign in this Kalendar *is to remind the Gardener of the Buſineſs he is to do in every Month of the Year, as well in the Kitchen-Garden, Flower-Garden* *and Green-Houſe, as in his Hop-Ground, Nurſery and Plantation of* Foreſt-Trees.

In the Front of every Month I have endeavour'd to give the Gardener ſome Account of the Weather he may reaſonably expect; and tho' it may vary in ſome Points from what I have ſaid of it, yet generally it may be found to agree with my Relation; and I think it is not unreaſonable that every Lover of Gardens ſhould be a little apriz'd of it, ſeeing how much the Buſineſs of every Month depends upon it; for it would be improper to do ſome Works in dry Weather, others in Wet, and others would be impracticable in Froſt and Snow; beſides, to have ſome gueſs when the Seaſon is moſt inclinable to Tempeſt, or when it is moſt ſubject to

Blights, will make us guard betimes againſt thoſe Evils.

In the next place I have carefully ſet down the Products of the Garden in ſuch a Manner, as will readily inform us what Herbs, Roots, Fruits and Flowers as are in Perfection at any time of the Year, which I conceive will be no ſmall Help to ſuch as have large Families, or make great Entertainments. And that there might be nothing wanting to make this Work as compleat as poſſible, I have added the Deſigns of a Green-Houſe, after a new Manner, chiefly contrived for the good Keeping of Exotick Plants *in the Winter, which with the Aſſiſtance of Seignior* Galilei, *a very skilful Architect of* Florence, *is, I think, no leſs beautifully adorn'd, than any Building I have ſeen, where*

where the Architect has not been confin'd in his Fancy.

As to other Matters related in this Work, which are new, and a little out of the common Road of Gardening, I deſire they may not be condemn'd before they are try'd; Experience will ſoon ſatisfie the Curious, that I have not recommended any thing as Matter of Fact, which is not ſo; and if by any Miſtake of the Perſon who tries what I preſcribe, the Experiment does not juſtly anſwer his Deſire, I ſhall not grudge at any time to give him a more perfect Explanation of the Method he ought to take, either by Letter or otherwiſe.

Some very Curious Gardeners, out of a Deſire (as I ſuppoſe) of Improving *themſelves in the Knowledge of Nature's Works, have objected againſt one Thing in particular, mention'd in my* New Improvement, Part I. Page 6. *which relates to the Budding the* Strip'd Jeſſamine *upon the Common Sort, and by that Means making the whole Plant, or many Parts of it, become ſtrip'd, from the unwholſome Tincture communicated to the Plant from the ſtrip'd Bud; this they affirm is not ſo, as it is related either by Mr.* Laurence, *or my Self; but I conceive their Objection rather proceeds from the Deſire they have to be convinced of the Certainty of the Thing, than from any Ill-nature; therefore, that I may not be wanting to them to give full Satisfaction of the Truth of what is alledg'd, relating thereto, by the Worthy Gentlemen above-mention'd, as well as what I have*

I have alſo affirm'd concerning it, I refer them to the Garden of the Ingenious Mr. Thomas Fairchild *at* Hoxton, *and that of Mr.* Furber *at* Kenſington, *where they may be Eye-witneſſes of above Twenty Plants, now growing, of the* Common White Jeſſamine, *which are variegated by the ſame Means, and after the ſame Manner as is related in the* Clergyman's Recreation, *and my Book of* Gardening.

There is one Thing ſo notorious, that I cannot paſs it by unobſerv'd, and that is the Indiſcretion which too many are guilty of, when they walk in fine Gardens, in gathering of Flowers and Fruits unſkilfully, which proves oftentimes prejudicial either in the Loſs of the Seed of a good *kind of Flower, the Loſs of an Experiment perhaps, or a Damage to the Tree the Fruit is torn from; and I the rather mention this publickly, becauſe many Gentlemen, who have fine Gardens, have often complain'd of this Breach of good Manners in their Neighbours, without being capable of redreſſing the Grievance they lay under: I'm ſure no Body can reaſonably take this amiſs from me, ſince every one muſt needs be ſenſible, this Inadvertency has many times deſtroy'd a valuable Plant, and given Uneaſineſs to a good Friend.*

Monthly DIRECTIONS
For Ordering the
KITCHEN-GARDEN,
And for the Management of
FOREST-TREES.

JANUARY.

THIS Month is commonly froſty, and if we have any great Snow in the Courſe of the whole Year, it is about this Time. In this Month the *Thames* has been three times frozen within the Space of forty Years: and it is obſervable, that the moſt piercing Cold reigns chiefly at this Seaſon: Therefore whatever is nice and curious in our Gardens, muſt now be diligently look'd after, eſpecially thoſe Plants which are in Hot-Beds, by taking proper Means to defend them from the cold Air, and covering the Glaſſes a little before Sun-ſet with Litter and Mats.

If a Gardener has any *Cucumber* or *Melon Plants* in his Hot-bed, he muſt be careful to give them Sun through the Glaſſes at every Opportunity, the better to keep them from the Injuries they will be apt to receive from the Steam of the Bed; for the Steam of the Dung riſing in great Quantity at this Seaſon, condenſes upon the Glaſſes, and then dropping upon the tender Plants rot them.

This injurious Steam may be corrected two Ways, *Firſt*, By allowing at leaſt ſix Inches thick of Earth to cover the Dung; and, *Secondly*, By contriving Frames of Woollen Cloth to ſlide in under the Glaſſes, which will receive the Steam that ariſes in the Night, and may be drawn out and dry'd every Morning without any Injury to the *Plants*.

The Damps being corrected in this Manner, the Heat of the Beds may be recruited or preſerved by laying hot Dung to their Sides every fifteen or twenty Days.

Sow *Cucumber* and *Melon Seeds* on the Hot-beds every Week, leſt by ſome Accident the firſt Plants are loſt.

Sow ſmall *Sallads* upon declining Hot-beds, *viz. Muſtard*, *Raddiſh*, *Creſſes*, and *Lettuce*; allowing them what Air the Seaſon will permit when they are come up, for 'tis Air that gives them their right Taſte.

Plant *Strawberries* upon a moderate Hot-bed, to make them bear Fruit betimes, but keep them not too tender.

If you have not yet planted any *Mint* upon Hot-beds, 'tis now a proper time to do it, that it may not be wanting in the *Sallads* of this Seaſon.

Make a Hot-bed for *Aſparagus* to ſucceed that made in *December.* [See my *New Improvements*, Part III. *p.* 139.]

If the Weather be froſty, bring into the Garden ſuch Manures as are neceſſary to enrich the Ground.

Continue to prune large *Orchard-Trees*, taking away the luxuriant Branches cloſe to the Stem, and ſuch as grow diſorderly.

Towards the latter End gather *Cions* for Grafts from good bearing Trees, and lay them half Way in the Earth till Grafting Seaſon; or, if they are to be ſent to a remote Place, ſtick their Ends in Clay, and bind them together with a dry Straw-band.

It is now the beſt Time to remove large Trees, if the Weather be froſty; for then the Clod of Earth about the Roots will remain entire without falling from them.

In open Weather continue to trench Ground, laying it in Ridges till you uſe it.

Now alſo is a good Time to compoſe Earth, by mixing ſeveral Soils together of different Qualities, as Sand with

Clay *&c.* for ſuch Soils are to be coveted before Dung, for *Trees* or other durable *Plants.*

Give freſh Earth to your *Sage*, *Thyme* and other ſweet Herbs, taking Care that their Roots are not diſturbed.

Uncover the Roots of *Trees* that are too luxuriant, cutting off ſome of their large Roots, as well to curb their too great Vigour, as to prevent their two early Bloſſoming.

If in the preceding Month your *Strawberries* have not been dreſſed with freſh Earth, that Work muſt be no longer delayed.

Towards the End, if the Weather be open, tranſplant all ſorts of *Timber-Trees*, having firſt prepared the Places for them by digging and looſening the Earth, and, if neceſſary, mixing it with different Soil.

In wet and heavy Ground, raiſe Banks of Earth a convenient Height to plant your Trees upon; but in dry Sandy Ground that Labour may be omitted.

In planting of Trees, have due regard to the Manner of the Roots, that thoſe which naturally ſpread near the Surface be not planted too deep, but as near as may be imitate Nature in this and all other Garden-Work.

In planting Trees for Timber always preſerve the leading or upright Shoots of the

Trees, pruning off only the Collateral Branches cloſe to the Stem.

Chuſe rather to plant ſmall Trees than thoſe of a large Size; a few Years will reward your Wiſdom in ſo doing; for where Trees have ſtood long enough in one Soil to become large and ſtately, they are hardly to be reconciled to any other, tho' they could be tranſplanted without any Loſs of their Roots.

Conſider well the Soil and Expoſure proper to each Tree you deſign to plant, and be not over haſty in cultivating any particular Tree you moſt admire, without the Place be agreeable to its Nature; for 'tis the want of ſuch Conſideration, which has confounded many chargeable Plantations.

Sow ſome *Hotſpur Peas* to ſucceed thoſe ſown in *November*; alſo ſet *Spaniſh* Beans in the open Field.

Set Traps for Mice and other Vermin, which are now very buſie about your young *Peaſe*, and thoſe you have newly put into the Ground.

Plant *Cabbages*, *Turnips*, *Parſnips* and *Carrots* for Seed.

Make up and enrich your *Hop-Hills*, allowing the Space of ſix Feet between the Centers of the Hills, raiſing each Bank a Foot higher than the Paths if the Ground lie wet, or about half as much if it be dry; make them flat on the Tops, and about two Feet over, working the Earth very fine to prepare it ſor planting the next Month; but if the *Hop Garden* is already made, it is now the Seaſon to lay Manure about the Edges of the Hills, and to lay upon them a thin Covering of freſh Earth.

Products of the Kitchen-Garden in January.

CHARDONES are yet in great Perfection.

Roots preſerved in Sand, which are now in Uſe, are, *Carrots*, *Parſnips*, *Beets* both *Red* and *White*, and *Potatoes*, with ſome *Skirrets*.

Roots yet remaining in the Ground, are, *Scorzonera*, *Turneps*, *Horſe Raddiſh*, and ſome young *Carrots* which were ſown in *July*.

The Roots kept dry in the Houſe, are *Onions*, *Garlick*, *Shallots*, *Rocambole*.

We have yet ſome *Artichokes* in the Houſe, which were preſerv'd by ſetting their Stalks in Sand.

Herbs for boiling are *Boor Cole*, *Savoy Cabbages*, *Sprouts* of *Dutch* and *Batterſea Cabbage*, Red, and the *Ruſſia Cabbage* and *Spinach*.

Herbs for Soup and other Kitchen Uſes, are, *Parſley*, *Sorrel*, *Chervil*, Leaves of the *White Beet*, *Leeks*, *Thyme*, *Sage*, *Winter-Marjoran*, *Clary*, *Sellery*, and by ſome are uſed the Tops of *Green Peaſe* and of *Aſparagus*.

Dry'd Herbs for Houſhold-Uſe are *Mary-gold-Flowers*, *Sweet Marjoran*, and dry'd *Mint*:

Sallads for this Month are compoſed of the Tops of *Mint*, young *Creſſes*, *Muſtard*, *Raddiſh*, young *Lettuce*, young *Onions*, *Sellery* and *Endive*, the Tops of *Burnet* and *Chervil*; to which Mixture we may add a *Cabbage Lettuce* preſerved under Glaſſes, or ſome of the *Dutch Brown Lettuce*, which was ſown abroad at the end of *Auguſt*, and is now a little curl'd and very agreeable among *Sallad Herbs*.

We have Plenty of *Aſparagus* upon the Hot-bed made for that Purpoſe in *December*.

Works to be done in the Kitchen-Garden in FEBRUARY.

THIS Month has been commonly reckoned the wetteſt in the whole Year: And I have obſerved, we rarely have any laſting Froſt begin at this Seaſon; but have taken Notice, that when *January* has given us a good ſhare of Froſt and Snow, the Weather in this Month is commonly warm and pleaſant, and if that happen, 'tis an admirable Time for planting of Trees, either for Fruit, Timber, or Ornament, if thoſe Works were not compleated in *September* and *October*.

Elm Sets ſhould now be gathered from the Roots of large Trees, and planted in Nurſery-Beds, and young Plantations provided of all ſorts of *Foreſt-Trees* and *Shrubs*, which are propagated from Slips or Layers.

Set *Acorns* of the *Ilex*, *Cork-Tree* and *Engliſh Oak*, *Cheſnuts* and *Walnuts*, and ſow the *Samera* of the *Elm* and *Bay-Berries*, all which come up the firſt Year.

Sow the Maſt of the *Aſh*, *Beech*, and ſuch other Timber-Trees as has been prepared a Year in Sand, for elſe they will be two Years in the Ground; as alſo the Berries of the *Hawthorn*, *Yew*, *Holly*, and ſuch *Evergreens* prepared as above.

What I here mention concerning the preparing of Seeds in Sand, is the common Practice of the Gardeners; but I am informed by Mr. *Furber*, a Nurſery-Man at *Kenſington*, that he ſow'd *Holly* and *Yew-Berries* which were two Years old, and had not been prepared that Way, which came up the firſt Year without difficulty: And he adds, that he gather'd *Aſh-Keys* in the Spring, and ſowed them immediately, and they came up in like manner, which I have done with the like Succeſs, but was not acquainted with the Meaning of it, till he told me the Reaſon, which is, that the *Aſh* will frequently hold its *Keys* two Years without letting them drop, and at that Age they are prepared of themſelves to grow without any Artifice.

Another has told me, that *Holly-Berries* being gathered and laid in a large Heap in the Houſe, without ſtirring them till Spring, then thoſe which lie in the middle of the Heap will not only be void of their Pulp or fleſhy Part, but be ſprouted, and then being immediately ſown, will come up in a Month's Time. This may happen perhaps from the Ferment which the Berries would raiſe when they began to ſweat; and it is from the ſame Reaſon I have recommended the Tryal of the Bran and Water, in my *New Improvements*, Part II. p. 10. which ſee.

Prune and nail your *Apricots* and other Stone-Fruit at the beginning of the Month, and laſt of all your *Nectarine*.

About the middle of the Month ſow *Beans*, *Peaſe*, *Parſley*, *Spinach*, *Carrots*, *Parſnips*, ſome *Turneps*, *Scorzanera*, *Onions*, *Leeks*, ſome of the *Dutch Brown Lettuce* and *Radiſhes*.

Sow *Skirrets* in light, rich Ground, where they may have ſome Moiſture. It is held by ſome, that when their Roots are about two Inches long, they ſhould be tranſplanted to make them large.

Plant *Garlick*, *Shalots*, and *Rocambole*, for Increaſe in light Ground.

Set *Potatoes* and *Jeruſalem Artichokes* in heavy Ground.

Tranſplant young *Cabbage Plants* for a Crop, if that Work was not done in the preceding Month.

Sow *Aſparagus Seeds* in the natural Ground.

Towards the End begin to graft in the Cleft, *Apples*, *Pears*, and *Cherries.*

Renew the Heat of your Hot-beds with freſh Dung, and continue to ſow *Cucumbers* and *Melons* every ten Days, for fear of Danger from the Weather.

Now alſo make a Hot bed for all ſorts of Annual Seeds, except *African* and *French Marygolds*, which may remain unſown till the next Month, otherwiſe they would grow too big for the Frames before the Weather would permit them to ſtand abroad.

Sow ſome of the *Batterſea Kidney Beans*, upon a Hot-bed, to have *Beans* in *April*, and raiſe ſome *Purſlane* upon Hot-beds.

Now it is a proper Time to make a *Muſhroom* Bed of long Dung, covering it with Straw or Litter, at leaſt eight or ten Inches thick; (See Directions for this Work in my *New Improvements*, Part III. *p.* 120.) and be ſure to water it well three times in a Week, till the *Muſhrooms* begin to ſpring, which will be in two Month's time after making the Bed, if the Dung is not cover'd too thick with Earth.

Plant *Hops* this Month, ſeven Plants on each Hill, obſerving that each Set or Plant has not more than two Joints; for if they were to have a greater Number, the Shoots would be too weak.

Now make a large Hot-bed for forward *Raddiſhes* and Spring *Carrots*, which may be ſown together, for the *Radiſhes* will be fit to draw in *March*, and be quite gone before the

Carrots begin to ſwell: This Bed muſt be cover'd about eight Inches thick with Earth, and defended from the Weather with Mats ſupported upon Hoops, for Frames and Glaſſes would draw the *Carrots* too much into Leaf.

Sow ſome *Collyflower Seeds* towards the middle of the Month upon ſome declining Hot-bed.

Towards the End ſow *Parſley* in the natural Ground.

Make Plantations of *Strawberries*, *Rasberries*, *Gooſeberries*, *Currants* and *Roſes*.

Plant yet *Vines* and *Figs*, *Honeyſuckles*, *Jeſſamines*, &c.

Product of the Kitchen-Garden in February.

WE have yet ſome *Chardones*.

We have ſtill ſome *Turneps*, *Parſnips*, *Beets*, *Potatoes*, *Skirrets* and *Scorzonera*, with ſome young *Carrots* ſown in *July*.

Aſparagus in Hot-beds now much better than in the preceding Month.

The Herbs for Kitchen Uſe are thoſe mentioned in *January*.

Herbs for boiling are *Red Cabbages*, *Sprouts* of *Cabbages*, and ſome few of the *Savoy Cabbages*, *Spinach*, and the Leaves of the *White Beet*.

Sallads of this Month conſiſt of the ſame ſmall Herbs as in the preceding, but we may now add *Water-Creſſes* and blanch'd *Dandelion*.

The *Cucumbers* ſown in *October*, if they have withſtood the Rigour of the *January*

Froſts, will towards the End yield us ſome Fruit, and the *Kidney-Beans* which were ſown at the ſame time, will now afford us Plenty of *Beans.*

Some *Cherries* are commonly ripe this Month, at Mr. *John Millet*'s, a curious Nurſery-Man at *North-End* near *Fulham*, and green *Apricots* may be now found at the ſame Place.

Works to be done in the Kitchen-Garden in MARCH.

THIS Month is generally attended with white Froſts in the Nights, ſudden Storms of Hail and Rain, and the Winds from the Eaſt and the North-Eaſt are now very hurtful to our bloſſoming Fruit-Trees, The Showers which fall at this Seaſon wound and bruiſe ſuch tender Plants as ſtand abroad, ſo that a Gardener muſt now be very watchful to defend and ſhelter his Trees and Plants from the Injuries of the Weather. The Sun has now great Power over Plants, when it is not interrupted by Storms; and the piercing Winds concurring with the hot Gleams which are now frequent, ſcorch and rivel the tender Shoots of ſuch Plants as now begin to ſprout, unleſs they be happily guarded. All young planted Herbs or Trees ſhould be carefully water'd, altho' we have many briſk Showers at this time, for they reach not deep in the Ground; and we muſt obſerve, that whatever we water now, muſt be in the Morning, for elſe the Froſts coming too ſuddenly upon the new water'd Plants, would chill their Roots.

If we have omitted any of the Works directed to be done in the former Months, they muſt not any longer be delay'd, for by the End of this Month our Garden ought to be compleatly crop'd.

Continue to ſow *Raddiſh*, and *Silecia*, *Imperial* and *Cabbage Lettuce* among all the Crops you put into the Ground, for they will come to Perfection, and be gather'd before the other Roots and Herbs cover the Ground.

Sow *Scorzonera*, *Salcifie*, and ſlip *Skirrets* of the laſt Year, leaving only the tender Fibres, and not any of the greater Roots about the Plants.

Sow *Peaſe* and *Beans*.

Make Plantations of *Mint*, *Balm*, *Pennyryal*, *Thyme*, *Savory*, *Sage*, *Tanzey*, *Rue*, and other durable Herbs for Houſhold Uſe, except *Lavender* and *Roſemary*, which will grow better if they are ſet in *April*.

Plant out ſome *Collyflower* Plants to ſucceed thoſe planted in *Autumn*.

Towards the Middle rake and dreſs your *Aſparagus*-Beds, for early in *April* the Buds will begin to appear above Ground, and therefore to delay this Work till the End of *March*, many Buds muſt then neceſſarily be broken off.

To make new Plantations of *Aſparagus* in the natural Ground, firſt trench the Earth, and lay a good Coat of Dung at the Bottom of the Trench, and when the whole Piece is thus prepared and levelled, begin your Plantation, allowing ten Inches Diſtance between the *Aſparagus* Plants, and four Lines of Plants in each Bed, leaving two Feet between the Beds for the Alleys, and then ſow the whole with *Onions.*

Sow young *Sallads* in ſome warm Place, adding to the ſmall Herbs of the laſt Month *Spinach*, *Rape* and *Sorrel.*

Sow *Cabbages* and *Savoys* for a Winter Crop, and ſome *Sellery* for early blanching: Sow alſo ſome *Collyflowers* on a declining Hot-bed.

Sow *Chardones* to tranſplant the next Month.

Now dreſs the *Artichokes*, leaving only three or four Suckers on each ſtrong Root, ſlipping off the reſt for tranſplanting and making good the Defects in the old Plantation.

Refreſh the *Cucumber* and *Melon* Beds with hot Dung, and ſow now for a full Crop.

Tranſplant *Lettuce* for cabbaging and to ſtand for Seed. Carefully ſtake up all new planted Trees, to defend them from the Violence of the Winds which now reign.

We may yet plant *Timber-Trees* of all ſorts, watering them well as ſoon as they are planted.

Sow the Seeds of the *Scotch Fir*, a Plant much neglected in *England*, but of admirable Uſe and quick Growth: They will thrive beſt in ſandy Soil, ſomewhat wet, ſuch as are moſt of our Heaths in *England*. The Roots run near the Surface, therefore they will not bear planting deep. If any affirm they will grow in a ſtiff Soil, I acknowledge it; but I am perſuaded, whoever has ſeen them in one and the other ſorts of Soil, will allow that the Ground I direct for them, is at leaſt one third more Advantage in the Growth of the Tree than the other.

Sow *Leeks*, *Beets*, *Chervil*, *Spinach*, *Fennil*, *Dill*, *Burnet* and *Sorrel*.

Sow *Endive* very thin, or it will run to Seed.

Divide the Roots of *Tarragon*, and tranſplant the Slips about eight Inches apart.

Make young Plantations of *Chives*.

Towards the End ſow upon the Hot-beds ſome *Purſlane*, *Naſtertium*, *French* and *African Marygolds*.

Sow *Marygolds* in the natural Ground.

Be diligent this Month in deſtroying Weeds before they run to Seed; for ſhould their Seeds once ſhed in the Garden, it is more than a Summer's Work to get them out.

In the *Hop-Garden* prune all the ſtrong Leaders to two Joints apiece, and take away all the young Shoots cloſe to the Roots, leaving only thoſe which ſhoot from the old Wyars.

Products of the Kitchen-Garden in March.

THIS Month affords us very little Variety of Herbs for the Table, for now the Winter-Stores are almoſt ſpent, and the Roots which have been hitherto uſeful, are hard and ſtringy; and beſides, an underſtanding Gardener muſt at this Seaſon new crop his Ground with Herbs and Roots for the ſucceeding Months.

The only Herbs now good, are Sprouts of *Cabbages*, young *Cabbage-Plants*, or *Coleworts*, and ſome of the *Winter-Spinach.*

The Roots are *Carrots* ſown in *July*, *Raddiſhes* of *Michaelmas*, ſome few *Turneps* that were ſown late, and *Red Beets.*

In the Hot-beds we have *Kidney-Beans* and ſome *Peaſe*, beſides *Cucumbers* upon the Plants raiſed in *January.*

Aſparagus upon the Hot-bed made in *February* is now much better taſted than what we cut in the preceding Months.

Towards the End, the *Raddiſhes* ſown upon the Hot-bed in *February* will be fit to draw.

We may now add to the *Sallads* of the foregoing Month ſome *Purſlane*, with young Tops of *Tarragon*, of which a few Leaves will ſerve to give a Reliſh to a large Sallad.

Hop Buds or *Tops* are now gathered to boil, and are not much inferiour to *Aſparagus.*

Ripe *Cherries* and Green *Apricots* may now be had in great Plenty at Mr. *Millet's* beforementioned.

At the End we have ſome *Scarlet Strawberries* ripe upon the Hot-beds, and alſo ſome few *Beans*, if we have had Courage enough to forward them by artificial Heats, but that Trouble and Expence rarely turns to account.

The Stalks and tender Sprouts of *Turneps* running to Seed are now excellent after the Strings are taken from them; theſe in the Market are called *Lupines*, and are generally eſteem'd one of the beſt boiled Sallads.

Works to be done in the Kitchen-Garden in A P R I L.

THE Weather is commonly unſettled in this Month, the Nights frequently froſty, and blighting Winds from the Eaſt are yet to be expected. The new Moon of this Month, which the *French* call the *Ruddy*

Moon, is for the moſt part attended with deſtructive and violent Winds, which endanger the tender Sprouts of Plants and young knit Fruit; therefore Gardeners ought to be careful how they yet expoſe any *Houſe Greens* or *Exoticks* to the open Air, or depend too much upon the fair Promiſe of a warm Day or two.

If the Weather be dry and windy, ſtake up all new planted Trees, if that Work was neglected in the preceding Month; and water them well once in ten Days; and fence your ſpired Seedling *Onions* from the Winds, for they are eaſily broken.

In dry Weather and light Earth ſet *Kidney Beans*, about three Inches apart in Lines, each Line two Foot diſtant from the other, for nearer than that they would not thrive. Now alſo ſet *Ronceval Peaſe* at the like Diſtance, and plant *Beans* to ſucceed other Crops; alſo where *Beans* have been ſet too thick, cut down every other Row within three Inches of the Root, and they will produce a good Crop in *Autumn*.

Now is the beſt Time in the whole Year to plant Cuttings or Slips of *Roſemary* and *Lavender*, eſpecially after Rain; and, if omitted in the laſt Month, we may yet plant Slips of *Thyme*, *Sage*, &c.

Sow *Spinach* for the laſt time in ſome moiſt Place, not too much expoſed to the Sun, for elſe it would ſoon run to Seed.

It

this Month. *Note*, All ſmall Seeds muſt be ſown ſhallow in the Earth, and the larger kinds deeper in Proportion; and again, as the Ground is more light and ſandy, every ſort muſt be ſown deeper than in heavy Soils.

Sow *Purſlane* upon the natural Ground; and towards the latter End ſow likewiſe ſome Seeds of the *Naſtertium Indicum*, if the Hotbeds are not already provided with young Plants; Sow ſmall *Sallads* in open Borders, as *Creſſes*, *Spinach*, *Muſtard*, *Turnep*, or *Rape* and *Raddiſh*.

We may continue to make Plantations of *Strawberries* till the Middle of the Month, placing the Plants about eight or ten Inches apart.

If the Weather be moiſt, it is not yet too late to make Layers of *Jeſſamine*, *Honeyſuckle*, *Roſes*, and ſuch like Shrubs.

Sow *Sellery* upon the natural Ground, or upon ſome decay'd Hot-bed, to ſucceed that ſown in *March*.

Sow now *Spaniſh Chardones* in the natural Ground for a ſecond Crop, making Holes for the Seeds about five or ſix Foot Diſtance; put four or five Seeds in each Hole, and when they are come up, leave growing only one ſtrong Plant in a Hole for blanching.

Towards the End hough *Carrots*, *Parſnips* and *Onions*, leaving the two firſt about five or ſix Inches diſtant from one another, and the latter about three or four.

Make Ridges for *Cucumbers* and *Melons* for a full Crop, and prune off the ſuperfluous Branches from the *Melon Plants* upon the forward Ridge: But do this carefully, without lifting up the Runners from the Ground; for the leaſt Diſturbance of that kind is apt to bruiſe the tender Branches, which often ends in the Loſs of the whole Plant.

Near the Beginning ſet up the Poles in the *Hop-Garden*, placing three or four in each Hole, as the Strength of the Plants require. At the ſame time lead the Wyars, or Runners of the *Hop-Vines* to the Poles, and, if need require, tie them up with Baſs. 'Tis now all Weeds ſhould be deſtroy'd before they run to Seed, to prevent an endleſs Trouble which they would create, if their Seeds were once ſuffered to ſhed.

If we have given timely Aſſiſtance with Artificial Heats to thoſe *Vines* planted againſt the forward Frames, we may now expect their Fruit to ſet; and it is then a proper time to pinch off the Buds of the bearing Branches two or three Buds above the Fruit; for we muſt conſider, thoſe Plants which are forwarded by Artifice, do not depend upon the ſame Seaſons as thoſe do which are under the common Law of Nature.

Water well your *Strawberries* while they are in Bloſſom, two or three times a Week, if the Weather be dry; this muſt be done in the Morning.

Products

Products of the Month of April.

FOR boiled *Sallads* we have young *Carrots* ſown in the foregoing *Autumn*, as alſo *Winter-Spinach*: We have yet ſome *Sprouts* from the old Stems of *Cabbages* and *Coleworts*; or young *Cabbage-Plants*, or *Radiſh-Tops*, in this Scarcity of Boiling-Greens are uſed by many, and are not to be deſpiſed: But, what is preferable to all, there is *Aſparagus* now in great Plenty upon the natural Beds, making its firſt Appearance in the Gardens near *London* about the third or fourth of this Month, and in thoſe Parts of *Devonſhire* lying near the Sea, above a Fortnight ſooner; which I mention here, that we may the better judge how much a Degree's Difference South or North between one Place and another, will forward or keep back the Growth of a Plant. We have now ſome *Sprouts* of *Collyflowers*, which begin to run to Seed, as they often will do if the Winter has been mild; they eat very well.

Young *Raddiſhes* are now very plentiful, and ſome of the *Dutch Brown Lettuce*, which has ſtood the Winter, will cabbage towards the End.

The ſmall Herbs for *Sallads* upon the natural Ground, are, *Creſſes*, *Raddiſh*, *Turnep*, *Spinach*, and *Muſtard*; and the other Herbs proper to mix with them, are, *Burnet*, *Tarragon*,

ragon, and young *Onions*. Upon the Hot-beds we have now alſo ſome young *Purſlane*.

About the End the *Kidney Beans*, which were ſown the middle of *February* upon a Hot-bed, will be fit to gather.

We have Plenty of *Cucumbers* upon the Hot-beds made for that Purpoſe about the Beginning of *February*, and *Muſhrooms* upon the Beds made about the ſame time.

We have now *Scallions* and *Leeks*, and ſweet Herbs growing of all ſorts, except that which is called the *Summer Sweet-Marjoran*.

Ripe *Cherries* and large green *Apricots* are now in Plenty at Mr. *Millet*'s aforeſaid, and ripe *Strawberries* upon thoſe Plants which have been aſſiſted with a Hot-bed.

Works to be done in the Kitchen-Garden in MAY.

ALTHO' in this Month the Seaſon is ſo far advanced as to bring many Plants to their higheſt Perfection, and Nature ſeems to be dreſt in her Wedding Garment, the Garden is yet ſubject to many Hazards from froſty Nights and cold Blaſts, which oftentimes happen in the firſt fifteen Days. It is not many Years ſince a great Snow fell in the firſt Week of this Month; and though Snows are uncommon at this Seaſon, yet the Showers which frequently fall towards the Beginning, are often mixed with Hail, which I account the moſt pernicious Off-ſpring of the Weather, with reſpect to Vegetables, as their Leaves and young Fruit are then tender, and very ſubject to bruiſe by every little Accident of that kind. It has been a Rule among the Gardeners, about the middle of this Month to expoſe or bring abroad their Exotick Plants, and ſuch tender Shrubs as the Uncertainty of the Weather in the preceding Months confined within Doors; and I have obſerv'd, we ſeldom have any Weather ſo unfavourable to Plants after the fifteenth as to do them any Prejudice.

If ill Weather or other Accidents has prevented a Gardener from performing what I have recommended for the Works of the laſt Month, let him delay them no longer than the firſt Week in this; for now the Seaſon is ſo far advanced, that a Day loſt is equal to a Week in *January*, *February*, or *March*.

Now look to your *Melon* Ridges, as well thoſe made in *February*, as thoſe which were planted in the laſt Month, weeding them, and carefully pruning off the Water Branches, which are known by their Flatneſs and extraordinary Breadth; it is alſo adviſable to pinch off the Tops of ſuch Runners as have Fruit upon them, leaving three or four Joints always beyond the Fruit, and particularly taking Care that every Fruit be ſufficiently ſheltered with Leaves, for to expoſe them to the Sun while they are ſmall, ſpoils their Growth. *N. B.* A Melon is about forty Days between the time of its ſetting and ripening; and as I preſcribe that Fruit to be ſhaded by the Leaves during the time of its Growth, ſo when that is perfected we cannot expoſe it too much to the Sun for ripening, if we would have it well taſted.

If the Seaſon be dry, rather float the Alleys between the *Melon* Ridges, than pour Water upon the Plants or near the Stems; for the Uſe of Watering is to feed the extream Fibres of the Roots, which are the only Parts of a Plant by which it receives its Nouriſhment, and theſe Fibres in *Melon* and *Cucumber* Plants always run as far as the Branches: The Inconveniencies which attend the wetting the Leaves or Stems of theſe Plants, are either, that they rot or mould by the Wet lying long upon them, or elſe they are ſcalded if the Sun ſhines hot.

The Water for this Uſe ſhould be as ſimple as poſſible, for all Waters prepared with hot Dungs breed Inſects among the Plants, which often deſtroy them. Pond-Water, which lies expoſed to the Sun, I take to be the beſt, and even that ought to be given but in ſmall Quantities to a *Melon*, for much Wet ſpoils its Flavour, but *Cucumbers* are great Lovers of it.

The Beginning of this Month ſow *Cucumbers* in the natural Ground, about twelve Seeds in each Hole, for fear of Diſappointments, but leave only four or five when they are come up. Let the Earth be freſh and well work'd with a Spade, rather light than otherwiſe, for in ſtiff Soil the Fruit is apt to ſuffer by Worms. This ſowing will afford us Plenty of Fruit in *July*, as well for Pickling as to eat with Sallads, a Plantation of this Kind producing near twice as much Fruit as one of the ſame Quantity of Ground forced with Dungs.

Sow ſome of the *Dutch Brown Lettuce* to be planted out the next Month for Cabbaging. We may alſo replant *Imperial* and *Sileſia Lettuce*, if we have any large enough for that Purpoſe. If any of the *Imperial Lettuces* are Cabbaged, cut the Tops of them croſs-wiſe, that the Flower-Stems may have Liberty to ſhoot in order for Seeding. Sow yet ſome *Radiſhes*.

Tranſplant *Collyflower Plants*, and make your firſt Drills for *Sellery*, if your Plants are large enough.

Sow *Ronceval Peaſe*, and towards the End Earth up and ſtake thoſe which are ſown in the former Month.

We may now ſow ſome *Endive* very thin, to be blanched without tranſplanting.

Sow *Purſlane* upon the natural Ground, and *Cabbages*.

Gather carefully the Neſts of *Caterpillers* and other Inſects which annoy your Trees, and prune off all crumpl'd Leaves and Twigs, for they harbour the worſt of Vermin, although they are ſcarce viſible, without the Help of Microſcopes; This Work is the more neceſſary, becauſe every Inſect increaſes Yearly about 400, and ſome of them many more; for Example, thoſe *Caterpillers* which feed upon the *Cabbage* and change into the common White Butter-flies, breed twice every Year, each of them laying near 400 Eggs at one time; ſo that from the ſecond Brood,

Brood of one ſingle *Caterpiller* we may reaſonably expect 160000.

Continue to deſtroy Weeds before they ſhed their Seeds, and particularly thoſe kinds which have feather'd Seeds, ſuch as *Dandelion*, which are carry'd by the Winds to every Quarter of the Garden, and are hardly to be rooted out when they once get Poſſeſion.

Products of the Kitchen-Garden in May.

THE Kitchen-Garden now affords us many pleaſing Varieties both of Fruits and Herbs.

Aſparagus is now in great Plenty, and *Collyflowers* are now in their greateſt Perfection. The *Imperial*, *Royal*, *Sileſia* and many other kinds of *Cabbage Lettuces*, are in their Prime, and very proper *Sallads* for this Seaſon, with Mixtures of young *Burnet*, *Purſlane*, the Flowers of the ſmall *Naſtertium*, and *Cucumbers*; for the ſmall Herbs which were the Sallads of the laſt Month, are now to be laid aſide, as they are apt to run into Leaf almoſt as ſoon as they are above Ground, and are too hot for the Weather.

We have yet ſome *Kidney-Beans* upon the Hot-beds.

This Month we gather *Peaſe* and *Beans* from thoſe ſown in *October*, and have Plenty of *Artichokes*.

We have now green *Gooſeberries* for Tarts.

The *Carrots* ſown upon the Hot-beds in *February* are now very good, but thoſe remaining of the Crop ſowed at *Michaelmas* are hard and good for nothing. *Spinach* is yet fit for Uſe.

Towards the End we have ſome *Scarlet Strawberries* ripe in the natural Beds, and the common *May Cherry*, with ſome few of the *May Duke-Cherries* againſt Walls, and alſo green *Apricots* for Tarts.

This is the moſt proper Month for diſtilling of Herbs, which are now in their greateſt Perfection.

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Works to be done in the Kitchen-Garden in JUNE.

THE Method I have taken in the preceding Sheets, in giving a ſhort Account of the Weather, which may reaſonably be expected in every Month, was chiefly deſigned to ſtir up the Gardeners to a neceſſary Care of ſuch of their Plantations as are the moſt ſubject to be injured by uncertain Seaſons: But as in the foregoing Months it required our greateſt Skill and Diligence to guard againſt Froſts, ſo now we ought with the greateſt Application, to uſe proper Methods for defending our Plantations from the too violent Scorchings of the Sun, and have a watchful Eye upon ſuch Plants eſpecially as have been lately tranſplanted, and refreſh them with moderate Waterings about their extream Fibres, for to give them Water too near the Stem does them little Good; this Work ought now to be done in the Evenings.

Continue to mow Graſs-Walks early in the Morning, and after Rain.

Sow ſome *Lettuces* for Cabbaging, and replant others which are large enough for that Purpoſe.

We may yet ſow *Radiſhes* and ſome *Endive*.

Continue to deſtroy Weeds as in the former Months.

It is now a proper time to clip our Edgings of *Box*, &c. eſpecially after Rain; but if the Weather be dry, gather Herbs for drying to lay up for Winter Uſe; thoſe are commonly *Sage of Virtue*, *Mint*, *Carduus*, *Sweet Marjoran*, *Thyme*, *Lavender*, *Roſemary* and the Flowers of *Marygolds*.

About the twentieth tranſplant Leeks in light rich Ground, about ſix Inches apart.

Cut no *Aſparagus* after the firſt Week in this Month, for it will impoveriſh the Roots.

The Seaſon is now very proper for budding or inoculating of *Peaches* and other Stone Fruits.

Sow *Kidney-Beans*.

Set ſome of the *Ronceval Peaſe* about four or five Inches apart, allowing two Foot Diſtance between the Lines; theſe will afford a good Crop in *September*.

Now look to your *Eſpaliers* of Fruit-Trees, and lay in good ſtore of Branches, as well to ſupply Vacancies as for Fruit-bearing.

Products of the Kitchen-Garden in June.

AT the Beginning we have ſome *Aſparagus*, but I cannot adviſe cutting them after the firſt Week.

We have great Plenty of *Garden Beans*, *Peaſe*, and *Kidney-Beans*. *Collyflowers* are now in great Perfection, and ſome of the *Batterſea* and *Dutch Cabbages* will be fit to cut towards the beginning of the Month. We have alſo great Plenty of *Artichokes*.

We begin to draw ſome young *Carrots* and *Onions* that were ſown in *February*, and ſome young *Parſnips*.

Sallads for this Month are compoſed of *Purſlane*, *Burnet*, the Flowers of *Naſtertium Indicum*, and *Cabbage Lettuces* of ſeveral Kinds, *viz.* the *Dutch Brown*, the *Imperial*, *Royal*, *Silecia*, and *Coſs Lettuces*, with ſome blanch'd *Endive* and *Cucumbers*.

The Flower-Stems of *Burrage* and *Burnet* are now good in Cool Tankards.

The Pot-Herbs in uſe the preceding Month are ſtill good.

We have green *Gooſeberries* for Tarts till about the End of this Month.

The ripe Fruits are *Strawberries*, *Cherries* of many Kinds, as the *Duke*, *White*, *Black*, and *Red Hearts*, the *Flemiſh* and *Carnation Cherries*, ſome *Rasberries*, *Currants*, and *Melons* of the firſt Ridges. Alſo we have

Codlins now fit for Uſe, and towards the End ſome *Junitings* and the *Maſculine Abricot*, and in the forcing Frames (if we have any) all the forward Kinds of Grapes are ripe.

Works to be done in the Kitchen-Garden in JULY.

WE are now arrived at that happy Seaſon, which affords us almoſt every Variety the Kitchen-Garden can produce. If the Gardener has been diligent in the preceding Months, he now meets the Reward due to his Skill and Labour. We have little Rain at this Time, and the Weather very hot; therefore our greateſt Care muſt be to water carefully all new planted Trees and Herbs, ſo as to nouriſh their outward Fibres, as I have before directed. The Hours of general Watering in this Month are from Five in the Morning until Eight, and from Five in the Afternoon till Eight or Nine in the Evening; but in particular Places, which have the Benefit of ſome Wall or Hedge to ſhade the Sun from them, we may take other times of the Day, obſerving the Motion of the Sun, that his Beams do not reach them, till at leaſt two Hours after watering; for the extream Heat of the Sun at this time of the Year would ſcald a new watered Plant, if we did not allow a ſufficient Time for the Moiſture to ſink into the Ground before the Sun comes upon it.

Truſt not too much to the ſudden Showers which may now fall, for they are of little help to the Roots of Plants; neither neglect to water thoſe Plants which ſtand abroad in Pots or Caſes, for they have yet leſs Benefit from the Rains in this Seaſon, than the Plants in the open Ground.

The firſt Week ſow *Kidney-Beans*, and ſome *Peaſe* to bear in *September* and *October*, where they may have ſome Shelter from the froſty Nights in thoſe Months. And have an Eye to ſuch Herbs as are now ſeeding: Water them plentifully, for about this time the Seed-Veſſels of many are forming, and a good Watering or two is very helpful to the filling of the Seed.

Delay not to gather ſuch Seeds as are fully grown and coloured in their Husks, pulling up the whole Plants, and ſetting them upright in a Green-houſe till the Seed-Pods are dry; for were we to wait till the Husks open before we gather them, great Part of the Seed would be loſt. This Way of gathering Seed is commonly practiſed; the Moiſture in the Plants and a little Sun will perfect the Seeds, and they are ſubject to no Hazard from Birds or Wet.

The firſt Week ſow *Cucumbers* upon a Bed made with dry Horſe-Litter, cover'd with light Earth ten Inches thick; theſe will begin to bloſſom in *September*, and muſt then be cover'd at Night with a common Frame and Glaſs, to keep them from Froſts and cold Rain. By this Method you may have *Cucumbers* till *Chriſtmas*.

Sow *Royal*, *Sileſia*, and *Brown Dutch Lettuces* about the middle of the Month, ſome of which will be cabbaged for Winter Uſe, and may then be planted cloſe together, where they may be ſhelter'd with Glaſſes, and have the Benefit of the Sun; but we muſt note, that they ſhould be ſecured before any Froſt can pinch 'em, or they will rot.

The ſecond Week in this Month ſow *Carrots*, *Turneps* and *Onions* to ſtand the Winter.

Earth up *Sellery* in Drills, and plant out a new Parcel to ſucceed the former.

Plant out *Collyflowers* to bloſſom in *September*.

Plant *Cabbages* and *Savoys* for Autumn and Winter Uſe.

Guard againſt Waſps and other Inſects, which now devour your Fruit, by placing Phials of Honey and Ale near your Fruit-Trees. This Way you may ſoon catch a large Quantity of them. Once every Week renew the Bottles, and above all take care to bruiſe the Inſects you take out of them; for tho' they are ſeemingly dead, I have known a warm Day or two bring them to themſelves; therefore take Care how you throw them heedleſly away.

There is no Time more proper to war againſt Ants, and other ſuch deſtructive Vermin, than this Month; they are now all abroad, and may be taken. [See Mr. *Laurence*'s Invention for deſtroying of Ants and Earth-Worms in his *Fruit-Garden Kalendar*, *p.* 74.]

Be careful to pick off all crumpled Leaves, where-ever you ſee them, and the very Twigs themſelves if they are curl'd, for they are the Beds of deſtructive Creatures.

I the more particularly recommend the Deſtruction of theſe devouring Vermin, becauſe of their wonderful Increaſe, eſpecially the ſmaller kinds of them, ſuch as infect the *Collyflower*, whoſe Eggs are five hundred times leſs than the leaſt viſible Grain of Sand, and many thouſands of them in Number lay'd (as I believe) from one ſingle Inſect; ſo that from a ſecond Generation of them they are ſo numerous, that if every Egg which one might find upon a blighted *Collyflower*, was a Globe of an Inch Diameter, they would fill more Space than the whole Terreſtrial Globe. The wonderful Smallneſs of the Eggs of thoſe Creatures, I confeſs, may ſeem very ſtrange to thoſe who are unacquainted with the Uſe of Microſcopes; but this is no more curious than what the late famous Dr. *Hook* has taught us in his Works, where he mentions the Seeds of Moſs, which were ſo ſmall, that ninety thouſand of them being laid together in a ſtrait Line, did not exceed the Length of a Barley-Corn, and that 1,382,400,000 of them would weigh only a Grain. But ſee more of theſe minute Beings in Mr. *Hook's Micrographia*, Mr. *Lewenhoek's* Works in the *Philoſophical Tranſactions*, Mr. *Balle's* Letter concerning Plagues, following my Chapter of Blights, in my *New Improvements*, Part III.

Hough and Weed as in the former Month.

About the 20th ſow ſome *Collyflowers* to ſtand the Winter; for the right Seaſon for this Work is chiefly to be regarded, if we propoſe to have good Flowers early in the Spring; for ſowing them only a few Days ſooner or later, makes them either run before their Time, or come much later and weaker than they ought to do. If the Winter be mild, and the Plants are ſet cloſe together, many will run up to Seed; and if ſharp Froſts and a rough Seaſon begins in *November*, ſome of this Sowing (with the uſual Helps) will make good forward Plants: However, ſince the Price of a little Seed can be no great Matter to a curious Man, I adviſe to ſow again the firſt Week in the next Month, as I ſhall more particularly direct; ſo that from theſe two Seminaries it will be morally impoſſible to miſs of a Crop to our Mind; for if the firſt run, they will not be quite unfit for Uſe, and thoſe ſown in *Auguſt* will then certainly produce good Flowers in the Spring.

We ſow *Chervile* for Winter.

We take up this Month *Shallots*, *Garlick*, and gather *Rocambole* when the Stalk turns yellow.

When the Stalks of *Onions* change their Colour, pull them up in dry Weather, and expoſe them to the Sun till they are well dry'd, to lay up for the Winter; but take care the Rain does not come at them after they are out of the Ground.

Tranſplant *Endive* for blanching againſt Winter.

Chardones ſhould now be tied up with Hay or Straw-Bands for blanching.

Make a Bed for *Muſhrooms*, and be ſure to cover it very thin with Earth, hardly two Inches thick, for on that depends your Succeſs.

Weed your young Nurſeries of *Foreſt-Trees.*

Products of the Kitchen-Garden in July.

WE have *Ronceval Peaſe*, *Garden Beans*, and *Kidney Beans*; and ſome commend the *Wing'd Peaſe* to be gathered very young, and dreſs'd as *Kidney Beans*.

We have *Collyflowers*, *Cabbages* and *Artichokes*, in Abundance, and ſome of the ſmall *Artichoke-Suckers*, to be eaten raw or fryed.

All ſorts of Herbs for the Kitchen are very good, if the Gardener has minded from time to time to cut them down for ſhooting afreſh: Aromatick Herbs eſpecially are in their greateſt Perfection.

Sallads for this Month are compoſed of *Cabbage-Lettuce*, *Purſlane*, *Tarragon*, *Burnet*, young *Onions*, *Cucumbers*, Flowers of the *Naſtertium Indicum*, and ſome *Endive* blanched.

We have young *Carrots*, *Turneps*, and *Beets*.

We have great Plenty of *Musk-Mellons*, *Currants*, *Gooſeberriss*, *Rasberries*, *Cherries*, *Plums*, *Abricots*, *Peaches*, and *Nectarines*.

The *Juniting* and *Codling* are now good, and ſome Pears. We yet have ſome *Wood-Strawberries*; and towards the End our firſt *Figs* are ripe, and ſome of the *July Grapes*.

This is the beſt Month for Pickling *Cucumbers*.

Works

Works to be done in the Kitchen-Garden in AUGUST.

THE firſt part of this Month the Weather is commonly hot and dry, ſo that Watering is ſtill neceſſary; but about the latter End we are not without Danger of froſty Nights, and I have obſerved that then alſo our firſt Rains begin.

We may water in the Evenings till the fifteenth, and after that, if there is Occaſion: The Morning is to be preferr'd for that Work, for fear of Froſt.

The firſt Week ſow a ſecond Crop of *Collyflowers* to ſtand the Winter, leſt the firſt ſhould run to Seed, which they will be apt to do if we have an open Seaſon till *Chriſtmas*, or the Ground be light and lie in a Bottom; eſpecially near the Sea: 'Tis good to provide againſt ſuch Accidents.

Sow *Radiſhes*, *Cabbages*, *Coleworts* and *Onions* to ſtand the Winter.

Sow *Lettuce*, *Chervil*, *Cornſallet*, and *Spinach* for Winter Uſe.

Now break off the Stems of ſuch *Artichokes* as have done blowing.

Sow *Creſſes* to ſtand the Winter; they will heighten the Taſte of thoſe Sallads which are gathered upon the Hot-beds in *December*, *January*, &c.

Tranſplant *Cabbage-Lettuces* to ſtand the Winter, eſpecially of the *Dutch Brown* ſort.

Tie up *Endive* for Blanching.

Give more Earth to your Blanching *Sellery*, and continue to raiſe the Earth about it every Fortnight, till it is fit for Uſe.

Gather Seeds as directed in the former Month.

Yet continue to deſtroy Weeds, and ſuch Vermin as annoy your Trees.

Towards the End ſlip and ſet Aromatick Herbs, as *Savory*, *Thyme*, *Hyſſop*, &c. and cut down thoſe which are run to Seed within three or four Inches of the Ground.

Till the tenth of this Month we may ſow *Turneps* in the open Field, eſpecially about *London*, for theſe Roots not only yield a profitable Crop, but very much enrich all light Soils. In thoſe Parts near the Sea in *Devonſhire*, the twentieth of this Month will not be too late to ſow them, for that Country is ſo fortunately ſituated, that it will perfect a Plant above fifteen Days ſooner than any Part about *London*; and from the beſt Obſervations I can make, I find that about *Northampton* all Plants come near a Fortnight later than in our *London* Gardens; ſo that *Turneps* ſhould be ſown in thoſe Parts very early in *Auguſt*, or rather the End of *July*.

Products of the Kitchen-Garden in Auguſt.

FOR boyling we have *Cabbages* and the *Sprouts* of the firſt *Cabbages*, *Collyflowers*, *Artichokes*, *Cabbage Lettuce*, *Beets*, *Carrots*, and *Turneps*, but other boiling Roots ſhould not yet be touch'd.

We have yet ſome *Beans*, *Peaſe*, and *Kidney-Beans*.

All ſorts of Kitchen-Herbs are now as in the laſt Month.

We have *Radiſhes* and *Horſe-Radiſh*.

The *Sallads* are *Cabbage-Lettuce*, *Cucumbers*, with a Mixture of young *Creſſes*, *Muſtard*, *Radiſh*, and a little *Tarragon*.

Roots now dry in the Houſe, are *Onions*, *Garlick*, *Shallots*, *Rocambole*.

We have Plenty of *Cucumbers* for Pickling, and this Work ſhould not be now any longer delayed, for the firſt Froſt or great Rains ſpoil them.

We have *Musk-Melons* in abundance.

Towards the End we begin to cut ſome *Sellery*.

We have ſtill ſome *Gooſeberries*, *Rasberries*, and *Currants*, with ſome of the *Carnation* and *Morella Cherries*, *Abricots*, *Plums* of various Kinds, ſeveral ſorts of *Peaches* and *Nectarines*, *Pears* and *Apples*, ſeveral Kinds of *Grapes*, *Figs* in abundance, *Mulberries*, and ſome *Filberts*.

Works to be done in the Kitchen-Garden in SEPTEMBER.

IN this Month the Gardener has great Variety of Buſineſs, and muſt employ his Head as well as his Hands towards furniſhing his Kitchen-Garden with every thing neceſſary for Winter Uſe. The Showers, which are ſeldom wanting at this Seaſon, prepares the Ground for the Reception of many Plants and Seeds; and the great Heats alſo declining, gives us now Opportunity of replanting many things which would have been endanger'd by removing in the preceding Months.

At the Beginning hough *Turneps* the firſt Time.

If the Weather be dry, gather ſuch Fruits as are now ripe upon the Trees, and ſuch others as are full grown, and in good Condition to be laid up in the Houſe for the uſe of the two following Months.

Note, Such *Pears* or *Apples* as are fit to gather will eaſily leave the Tree, therefore uſe no Violence to pull them off, for ſuch as do not willingly part from the Tree, will ſhrivel and have an inſipid Taſte.

Gather ſuch ſmall Seeds as are now ripe, according to the former Directions.

Gather your *Leek* Seed, if the Seeds are black, cutting the Heads from the Stems, and ſpread them upon a Sheet every Day in the Sun, till they are fit to be thraſh'd out.

Gather the Pods of *Garden* and *Kidney-Beans*, and expoſe them to the Sun for drying, to be laid up till Spring, or the time you would uſe them, and let them not be taken out of the Seed-Pods till your Ground is ready for them, for the Pods preſerve the Seeds. In like manner ſave your choice ſorts of *Peaſe*.

The *Cucumbers* which are now full ripe muſt be cut open, and the Seeds and Pulp taken out of them, to remain together two or three Days before they are waſh'd clean: The Seed may then be kept in Water about twenty four Hours, and lay'd to dry in the Sun for ten Days. Beſure all Seeds are thoroughly dry before they are laid up, or they will rot.

Cover now every Night your *Cucumbers* ſown in *July*.

Sow ſome of the *Spaniſh Radiſh* for the Winter.

Make Beds for *Muſhrooms* as before directed.

We may yet replant *Endive*, and all ſorts of Fiberous-rooted Herbs.

Continue to earth up *Sellery*, and now raiſe Banks of Earth about your *Chardones* for blanching.

Sow *Spinach* to be cut in *February*.

Yet ſow *Sorrel* and *Chervil*.

Make Plantations of *Cabbages* and *Coleworts*.

'Tis now a good Seaſon to tranſplant *Strawberries*.

Now make Plantations of the *Dutch Brown Lettuce* to ſtand the Winter.

Tranſplant young *Collyflower Plants* in Places where they are to Flower, and in Nurſeries under ſome warm Wall, or Place of Shelter. *Note*, Thoſe which are now planted out for Good, will bloſſom above fifteen Days ſooner than thoſe which are planted in the Spring, and will produce much larger Flowers, if they are well defended from Froſts with Glaſs Bells.

If the Seaſon be dry, water in the Mornings.

The laſt Week, if Showers fall, is a very ſafe time to plant Fruit-Trees, altho' their Leaves are not fallen; ſuch as *Peaches*, *Nectarines*, *Cherries*, and other *Stone-Fruit*; but *Apples*, *Pears*, &c. may be delayed till the middle of the next Month.

We may now tranſplant *Aſparagus Roots*.

Sow ſmall Herbs for Sallads in ſome well-expoſed Place, obſerving to provide ſuch Mixtures for this Seaſon, as are hotter to the Taſt than what are raiſed in the former Months, for the Evenings (the beſt Time to eat Sallads) are now cold.

Sow ſome Seeds of the *Naſtertium Indicum* in Pots to ſtand the Winter, which they will do very well, if they are ſhelter'd in a common Greenhouſe.

Products of the Kitchen-Garden in September.

WE have now ſeveral kinds of *Peaches*, *Grapes*, *Figs*, *Pears* and *Apples*, with ſome of the late Kinds of *Plums.*

We have yet *Melons* and *Cucumbers.*

Walnuts are now good, and *Filberts* full ripe.

This Month affords us ſome young *Garden Beans* and *Ronceval Peaſe*, and we have yet ſome *Kidney-Beans.*

Upon the *Artichokes* which were planted at Spring, we have now very good Flowers and Suckers, and we have ſtill Plenty of *Colly-flowers.*

We have *Cabbage-Lettuces* of ſeveral ſorts in great Perfection, and *Radiſhes.*

Sallads for this Month are compoſed of *Creſſes*, *Radiſh*, *Chervil*, young *Onions*, *Tarragon*, *Burnet*, and *Lettuce*, with ſome blanch'd *Sellery* and *Endive.*

We have Plenty of *Muſhrooms* upon Beds and in Paſture-Grounds.

firſt cutting off their green Tops and growing Buds, and then cover them about ſix Inches thick with Wheat-Straw ridgewiſe. We may this way preſerve them fit for Uſe till the following *June.*

'Tis now the beſt time of the Year for tranſplanting of Fruit-Trees, altho' their Leaves are upon them.

Tranſplant *Foreſt-Trees* of all ſorts from the Beginning to the End of the Month; the *Elm* eſpecially about the firſt Week, altho' its Leaves are then very green. I have ſeen the Experience of this at *Mamhead* in *Devonſhire*, the Seat of *Thomas Balle*, Eſq; a very curious and learned Gentleman.

About the middle of the Month ſow the *Cyder-Preſſings* in Beds of freſh Earth, to raiſe Stocks for Graffing, or even making of *Orchards* without Graffing. From a Nurſery of this Kind we raiſe as many different ſorts of *Apples* as we raiſe Plants, altho' the Seeds came all from the ſame Tree; ſo much is Nature pleas'd with Variety: And it may be, was the Earth more conſtant and uniform in its Productions, its Vegetative Power would be too ſoon exhauſted; for I conceive, were all *Apples* exactly the ſame, they would all draw the very ſame Nouriſhment from the Earth; and the like with every other Tribe of Vegetables. But this Variety ſeems to determine what I have often thought of, that there are as many diſtinct Qualities in the raiſing *Cucumbers* to have them come forward, is certainly much better than to begin after the uſual Method in *December* or *January*; for theſe Plants will better endure the cold Air, than thoſe which are raiſed when the Ground is cover'd with Snow.

Now ſet ſome *Kidney-Beans* in Baskets under ſome warm Wall, to be afterwards aſſiſted by moderate Hot-beds as the Seaſon becomes violent. With good Management theſe will fruit very early.

Take up thoſe *Colly-flower Plants* which begin to flower, tie their Leaves together and bury their Roots and Stalks in Sand in a Cellar, or ſome cool Place, the Flowers will increaſe in Bigneſs, and remain good two or three Months.

Alſo cut *Artichokes* with long Stalks, and preſerve them in the Houſe, ſetting their Stalks in Sand.

'Tis now the Seaſon to lay up Roots for Winter Store, ſuch as *Carrots* and *Parſnips*; and ſome Gardeners alſo think it beſt to take the Roots of *Turneps* out of the Ground, and lay them in Sand: But I rather chuſe to leave the *Turneps* in the Ground 'till we are ready to uſe them; and for the other two kinds I preſcribe the following Method: Make choice of a dry Part in your Garden, and there dig a Trench about ſix or eight Inches deep, into which (without Mixture of Earth or Sand) lay your Roots cloſe together, Sow *Creſſes*, *Lettuce*, *Muſtard*, *Radiſh*, *Turnep*, and *Spinach* upon a decay'd Hot-bed, to be cut for Sallads.

If you have not yet made a Plantation of *Lettuces* (already Cabbaged) for Winter Uſe, delay no longer to do it in ſome well-expoſed Place, where they may be defended from the Froſt.

Now gather ſuch *Pears* and *Apples* as are full ripe, in a dry Day, without bruiſing them, and lay them in the Fruitery upon dry *Moſs*.

Sow *Radiſhes* in ſome warm Place to draw early in the Spring.

Sow ſome of the *Hotſpur-Peaſe* and *Spaniſh-Beans* in ſome well-expoſed Border, rather under a thick Hedge, than under a Wall.

Make Plantations of *Gooſeberries*, *Currants*, *Rasberries* from the Suckers or Cuttings.

Now make Plantations of *Apples* (graffed upon *Paradiſe* Stocks) in Pots; they will bear when the Trees are very ſmall, and are very Ornamental at an Entertainment to be ſet growing upon a Table.

Now put ſome Roots of *Mint* upon a gentle Hot-bed.

Products of the Kitchen-Garden in October.

IN this Month we have yet remaining ſome *Collyflowers*, *Artichokes*, *Peaſe* and *Beans*.

The *Kidney-Beans* ſown in *July* will now produce good Fruit, if we defend them from the cold Nights.

We have yet *Cucumbers* and ſome *Melons*.

Roots for boyling are *Turneps*, *Carrots*, *Parſnips*, *Potatoes*, *Skirrets*, *Scorzonera*, and *Beets*.

Roots to uſe raw in the Kitchen are *Onions*, *Garlick*, *Shalots*, *Rocambole*.

Sallad Herbs are *Creſſes*, *Chervil*, *Muſtard*, *Radiſh*, *Turnep*, or *Rape*, *Spinach*, *Lettuce* both ſmall, and ſeveral ſorts of *Cabbage-Lettuce*, *Burnet*, *Taragon* and young *Onions*, with blanch'd *Sellery* and *Endive*.

We have *Chardones*.

Herbs for Soup and other Kitchen-Uſes are *Parſly*, *Beets*, and all the Aromatick Herbs.

Ripe Fruits in this Month are ſome of the late *Peaches* and *Plums*, *Grapes*, *Figs*, and *Mulberries*, with ſome *Filberts* and *Walnuts*, and great Variety of *Pears* and *Apples*.

We have Plenty of *Muſhrooms*.

Works to be done in the Kitchen Garden in NOVEMBER.

THIS Month is ſubject to violent Winds, froſty Nights and great Rains, taking their Courſe by turns to the great Hurt of our Gardens and Plantations. It is not enough to guard againſt the pinching Froſts, or ſhelter many tender Plants from the cold Rains which fall at this Seaſon, but we muſt alſo be diligent to ſecure our Fruit-Trees and ſuch Foreſt-Trees as have been lately planted, with ſtrong Stakes, leſt they are blown down or ſhaken by the boiſterous Winds now coming from the Weſt; for nothing in my Opinion contributes to deſtroy the Welfare of a young Tree more, than to leave it unguarded and expoſed to the Mercy of the Winds; the young Fibres lately formed are broken, and every Part thro' which the Sap ſhould have its Paſſage to the Head, is bruiſed and wounded; ſo that for want of a natural free Courſe for the Sap, the top is not half ſupply'd, and the whole languiſhes.

Now trench Ground, and lay it up in Ridges to mellow.

Set *Beans* of the *Spaniſh* Kind, and ſome of the *Hotſpur-Peaſe* in ſome well expoſed Place.

Prepare now a gentle Hot-bed for the *Cucumbers* ſown in *October*, and for the *Kidney-Beans* ſown at the ſame time; but plant them not together, for the Warmth which is neceſſary to keep a *Cucumber* would deſtroy the *Beans*.

Now make Hot-beds for *Aſparagus* to have ſome in *December*; and if we are not provided with Roots in our own Nurſery, we may take them from ſome old Plantation which is worn out. Set the Roots cloſe together without trimming, taking Care that they do not come within two Inches of the Dung, and that their Buds are covered at leaſt four Inches thick with Earth. [See further Directions in my *New Improvements*, Part III. *p.* 140.]

'Tis now a very good time to lay down Branches of the Vine, eſpecially ſuch as we would have Fruit upon the following Year, to be ſet growing in Pots upon a Table at great Entertainments. The Branches for this Purpoſe muſt be Shoots of the ſame Year, and ſo drawn through the Hole at the Bottom of a Garden-Pot, that when it is filled with Earth there may be a reaſonable Number of Eyes or Buds above Ground: A ſtrong Branch perhaps may bear eight or nine, and as the Branch is ſmaller in Proportion four or five.

Now prune your *Vines* growing in the open Borders and Vineyard, and plant new ones where there is occaſion. They will bear plentifully, and their Fruit will ripen very well without the Help of a Wall, if we make choice of the *Black Currant Grape* (the beſt for that Uſe) the *White Muſcadine*, and the *Black Fronteniac*; eſpecially when they are rightly managed, as in the Garden of Mr. *Rigaud* near *Swallow-Street*, who never fails of a good Crop of Fruit from theſe ſorts planted in open Borders.

Continue ſtill to plant Trees, if the Weather be open, and plant Suckers and Cuttings of *Gooſeberries*, *Currants* and *Vines*.

Plant *Mint* upon moderate Hot-beds.

Sow *Lettuce*, *Creſſes*, *Muſtard*, *Radiſh*, *Turnep* and *Spinach* upon Hot-beds for young Sallads.

Earth up *Sellery*, and tie up *Endive* Plants for blanching.

Now is the beſt time to cut off the *Aſparagus* Haulm when it is turn'd yellow, cut it within two or three Inches of the Ground, and fling up ſome Earth out of the Alleys upon the Beds; or if your *Aſparagus* has been worn, give it a Covering of rich Soil.

Continue ſtill to trench Ground, and in froſty Weather wheel on Dung and other Manures upon ſuch Places as want to be enriched, for then the Walks will not be ſpoiled.

Sow *Peaſe* and *Beans* of the *Hotſpur* and *Spaniſh* Kinds in open Ground, and if the Weather be fair, Earth up thoſe ſown in *September.*

Products of the Kitchen-Garden in November.

THIS Month we have *Collyflowers* in the Green Houſe and ſome *Artichokes.*

Roots to be uſed this Month are *Carrots, Parſnips, Turneps, Beets, Skirrets, Scorzonera, Horſe-Radiſh, Potatoes, Onions, Garlick, Shalots, Rocambole.*

Pot-Herbs are *Sellery, Parſly, Sorrel, Thyme, Savory, Beet-Leaves,* and *Clary* out of the Garden: And of dry'd Herbs we have *Mint, Sweet Marjoran,* and Flowers of the *Marygold.*

Herbs for boiled Sallads are *Cabbages* and the *Sprouts* of *Cabbages,* ſome few *Savoy Cabbages,* and *Spinach.*

We have *Cucumbers* upon thoſe Plants ſown in *July,* if we have kept them well guarded from Rain and Froſt.

Sallads for this Month are the ſmall Herbs on the Hot-bed, with *Burnet, Cabbage-Lettuce, Sellery* and *Endive* blanch'd, and young *Onions.*

We have yet ſome *Grapes, Peaches* and *Figs,* with *Apples* and *Pears* of ſeveral ſorts;

ſome *Bullis*, *Wallnuts*, *Hazlenuts*, *Cheſnuts*, *Medlars*, and *Services*, with ſome *Arbutus* or *Tree-Strawberries*.

Works to be done in the Kitchen-Garden in DECEMBER.

THIS Month, commonly called the *Black Month*, is ſubject to every ſort of Weather, which is fatal to Plants of a tender Nature. All Vegetables of our Climate ſeem now to ſleep; the Days are ſhort, and every little Warmth from the Sun makes every curious Lover of Gardens wiſh for the Spring; tho' indeed 'tis now an ingenious Gardener will ſhew his Skill, in helping Nature by Artifice to produce ſuch Fruits and Herbs as ſhe is not capable of bringing forth, without very extraordinary Aſſiſtance.

Guard againſt the Violence of Froſts, which commonly begin with great Severity to reign in this Month.

In bad Weather, and chiefly in the long Evenings, a Gardener ought to employ himſelf in his Study, in preparing and fitting up his Garden-Tools, and making ſuch Shelters for tender Plants as will now be required. He ought to provide his Shreds for Nailing, and look over his Fruitery, removing all ſuch Fruits as are any ways damaged, for they ſpoil the reſt.

Examine Orchard Fruit-Trees, and take away ſuch Branches as make Confuſion, covering every conſiderable Wound with ſome of the following Mixture.

Take of *Bees-Wax*, *Roſin* and *Tar* equal Quantities, to which add of *Tallow* about half the Quantity of any one of the former; melt and mix them together in an Earthen Veſſel well glazed, and immediately after any Amputation, dip a Painting Bruſh in this Mixture, and cover the Wound with it; this will keep the wet and cold Air from penetrating into the Body of the Plant, and keep it from rotting.

Set Traps for Vermin, they now deſtroy your Roots and Seeds.

In open Weather we may ſow *Peaſe* and *Beans* of the ſame Kinds and in the ſame Manner as directed in the former Month.

We muſt now look carefully after our Hot-beds, and add to their Heat if they begin to cool, by lining them with hot Dung; but we muſt always remember the Deſign of theſe Beds is rather to defend the Plants in them from Cold, than to make them grow quick. If we were careful to raiſe Plants of *Cucumbers* and *Kidney-Beans*, as I directed in *October*, we ſhall now ſee them in a hopeful State, and much more capable of reſiſting the Froſts than thoſe that were ſown at the Beginning of this Month, as many Gardeners are uſed to do.

Towards the middle of the Month make a Hot-bed for *Aſparagus*, to be ordered in the ſame manner of that made in *November*.

Sow upon a Hot-bed *Lettuce*, *Radiſh*, *Creſſes*, *Muſtard*, and other Herbs which are hot, to cut for ſmall Sallads.

In froſty Weather bring into the Garden the neceſſary Manures for enriching the Ground.

Products of the Kitchen-Garden in December.

WE have now many ſorts of *Cabbages* and their Sprouts for boiling, and *Spinach*.

In the Conſervatory we have ſome *Colly-flowers*, and *Artichokes* preſerved in Sand.

The Roots for this Month are the ſame as in the laſt.

Sallads are the ſmall Herbs upon the Hot-bed, with *Mint*, *Tarragon*, *Burnet*, *Cabbage-Lettuces* preſerved under Glaſſes, with ſome *Creſſes* and *Chervil* upon the natural Ground, which have a high Taſte, and help the Sallads of this Seaſon very much; and with theſe we have *Sellery* and *Endive* blanched.

Herbs for Soups and the Kitchen uſe are *Sage*, *Thyme*, *Savory*, *Beet-Leaves*, the *Tops* of young *Peaſe*, *Parſley*, *Sorrel*, *Spinach*, *Chervil*, *Sellery* and *Leeks*, with *Sweet Marjoran* and *Marygold Flowers* dry'd, and alſo dry'd *Mint*, for the *Green Mint* at this time of the Year is ſcarce, and not ſo good for Sauces as for Sallads.

We have *Aſparagus* upon Hot-beds, and if we have been diligent we have yet ſome *Cucumbers* upon the Plants ſown in *July* and *Auguſt*.

We have Plenty of *Pears* and *Apples*.

Monthly DIRECTIONS
For Ordering the
GREEN-HOUSE
AND
FLOWER-GARDENS.

Monthly DIRECTIONS
For Ordering the
Green-Houſe and Flower-Gardens.

JANUARY.

IF the Weather be very ſevere in this Month, fling ſome looſe Straw over your Beds of *Anemonies* and *Ranunculus*; or if ſuch Beds of Flowers are already covered with Snow, let it remain till it begin to thaw, and then we cannot be too expeditious in removing it, for the Snow-Water has a very ill Effect upon Bulbs and Roots of this Kind, if we ſuffer it to ſink into the Ground about them; and beſides, if a froſty Night ſhould ſpeedily follow a Thaw, the Wet near the Surface would freeze into a thin Ice, which would cut or wound the Leaves or Stems of theſe Flowers, and make them decline.

If the Weather is gentle and open, plant *Anemony* and *Ranunculus* Roots in Beds of

Earth well wrought with a Spade, and indeed if it was ſifted it would be much the better. *Note*, The Earth cannot well be too light for theſe Flowers, and eſpecially the *Ranunculus:* It ſhould be freſh, and free from any Mixture of Dung, which breeds Vermin, and is ever deſtructive to Roots of this Kind.

About the middle pick off the dead and withered Leaves from your *Auriculas*, and take away as much Earth out of each Pot as poſſible without diſturbing the Roots, to make room for ſome freſh Earth, prepared with ſandy Loam mixed with one third part of rotted Wood.

Note, That in filling up the Pots with this Earth (which muſt be well ſifted) preſs it gently about the Roots, and raiſe it quite to the Leaves, but bury none of them, for they will decay.

Note alſo, All compoſed Earths ſhould lie at leaſt a Year before they are uſed.

Guard well againſt the Mice, for this Month they deſtroy all bulbous Roots they can come at, particularly the *Crocus*.

In the Green-Houſe pick off all mouldy and wither'd Leaves from the Plants, for whatever they touch they infect. Give no Water to any Plant that will hold up its Head without it; and in ſevere Weather rather endeavour to keep the Cold out of the Houſe, than make the Plants grow by any forcing Heat, for Shoots made at this time of the Year are ſickly, and weaken the Plant. Upon a Thaw make a ſmall Charcoal-Fire or two, in proportion to the Bigneſs of the Houſe, and let in a little Air at the ſame time, if the Wind is not too cold: Theſe Fires dry the Damps which riſe always after a Thaw, and by deſtroying thoſe Poiſonous Vapours, keep the Plants dry, and free them from the danger of rotting.

Tranſplant the *Winter Aconite* in Flower, and part its Roots; for when the Leaves of this Plant are decay'd, 'tis very hard to find the Roots.

Flowers now blowing in the Green-Houſe and Flower-Gardens in January.

SEveral of the *Ficoides* are now in Flower, and *Aloes* of ſeveral ſorts begin to put forth their Flower-Stems. The *Indian Yellow* and the *White Spaniſh Jeſſamines* have yet ſome Bloſſoms upon them, and ſome ſickly *Orange-Trees* bloſſom about this time. The Plant known to the Gardeners by the Name of the *Candy-Tuft-Tree*, or *Thlaſpi Sempervirens*, is yet in Flower, and ſome kinds of the *Gerranium*, with the *Yellow Indian Jeſſamine.*

In the Flower-Garden we have in Bloſſom the *Winter Aconite*, *Single Wall-Flowers*, the *Chriſtmas Flower*, or *Black Hellebore*, and that ſort with a green Flower; *Snow-Drops*, the *Brumal Hyacinth*, ſome *Stock Julyflowers*, where they are well ſhelter'd, *Single Anemonies*, the *Gentianella*, the *Winter Cyclamen*, *Primroſes*, and ſome kinds of the *Polyanthos*, the *Laurus Tinus*, *Mezerions White* and *Red*, and the *Arbutus*, or *Strawberry-Tree*. The *Holly* and *Pyratantha* are now adorned with their beautiful Scarlet Fruit, and the *Amomum Plinii*.

We have now alſo the *Glaſſenbury Thorn* putting forth a few faint Flowers, if the Froſts do not hinder; and as this Plant uſually begins its bloſſoming in *December*, it has given room for ſome ſuperſtitious Perſons to look upon it as a Miracle, thinking the Flowers appear only upon *Chriſtmas-Day*, as the Story goes of it. *Joſeph* of *Arimathea*, they ſay, coming into *England*, brought with him a Staff of this Thornwood, and ſet it upon a *Chriſtmas-Day* in the Ground at *Glaſſenbury*, where it immediately took Root, budded and bloſſomed, and ſo it has continued to do ever ſince upon that Feſtival, as the People tell us, in Honour of St. *Joſeph* its Maſter; but the Plant being now pretty well known, and cultivated in ſeveral Places, we find it very apt to miſtake a Week or two in the time of its Bloſſoming, according as the Winter has been more mild or ſevere; ſometimes I have ſeen it in Flower the Beginning of *December*, and at other times it has not budded till the middle of *January*; however, it ſeldom fails of Flowers about that Seaſon, and has nothing more in it than what we find in all other Plants brought from foreign Parts, which at the time of their natural Spring are ever diſpoſed to bloſſom, notwithſtanding the Oppoſition of our Seaſons; and it is not unreaſonable to think this Plant was originally brought from ſome Country where the Spring is about *December*, ſuch as *Arabia*, the *Holy Land*, and many other Places about the ſame Latitude: And if it was true that the firſt Plant of it at *Glaſtenbury* grew from a plain Staff or Twig without Root or Branch, it is no wonder, although it had been taken from the Tree ſix Months before; for I have frequently cultivated Plants in as bad a Condition, which have been longer than ſix Months without Earth, and they have grown very well; ſome Stakes of the *Willow*, for Example, will do the ſame. This Plant may be encreaſed by graffing it upon the *White-Thorn* in *March*.

Such as are minded to make Gardens of Flowers for the ſeveral Months in the Year may compoſe them from theſe Catalogues of Flowers blowing in the ſeveral Seaſons, only obſerving that ſuch as are to be in their Perfection in the Winter, ſhould have as much of the Sun's Benefit as poſſible.

Works to be done in the Green-Houſe and Flower-Garden in F E B R U A R Y.

CONTINUE the Works of the former Month, if the Seaſon has not then been favourable enough to finiſh what was directed to be done.

The firſt Week ſow *Auricula* Seeds in Caſes filled with light Earth, ſuch as rotted Wood or Leaves, but chiefly (if we can get it) the Earth taken out of the hollow Places in *Willow Trees*. When the Earth is raked level, ſow the Seeds upon it, and then preſs all down with a piece of ſmooth Board; cover theſe Boxes with Nets, and let them ſtand in ſome ſhady Place, giving them frequent Waterings till they come up. [See *New Improvements*, Part II. *p.* 102.]

Now likewiſe ſow the Seeds of *Polyanthos* very ſhallow upon ſome ſhady Border.

Mix *Anemony* Seed with dry Sand, and ſow them in very light Earth, allowing them a thin Covering of Mold well ſifted.

We may ſtill put into the Ground in ſome ſhady Place, Roots of the *Anemony* and *Ranunculus* to blow late.

About the middle of the Month give freſh Earth to your *Carnations* that were planted out in *Autumn*; thoſe Flowers will blow much ſtronger than ſuch as are planted out for blowing in *March.*

Turn and skreen Mold for the uſe of the next Month.

If the Weather be open, tranſplant all ſorts of flowering Shrubs, which bear the Weather, *viz. Syringa, Lylac, Guilder Roſe, Laburnum, Roſes, Jaſmine, Honeyſuckle, Spireas, Altheas,* &c.

Part and tranſplant *Pæonies.*

Towards the End, ſow *Larkſpurs, Holyoaks, Canterbury-Bells, Primroſe Tree, Sweet-Williams, Annual Stocks, Candy-Tufts, Pinks,* and the *Scarlet Lichneſs,* eſpecially if the Soil be light; but in ſtiff Soil we may delay that Work till about the tenth of *March.*

'Tis now a right Seaſon to ſhift ſuch *Myrtles* as want large Pots, at the ſame time ſhaving off the outſide Fibres of their Roots, and, if they have occaſion, prune their Heads pretty cloſe.

Alſo about the End of the Month head *Orange-Trees*, and give them freſh Earth, always minding to wax thoſe Wounds we have made, with ſoft Wax. [See my *New Improvements,* Part III. *p.* 214.]

Stir the Surface of the Earth in your Pots in the Conſervatory, but be not over-haſty in giving Air to your tender Plants, for they will not yet bear it. 'Tis now the Time that many Exoticks periſh through the Indiſcretion of ſome Gardeners, who are

tempted

tempted to open the Windows of the Green-Houſe when the Sun ſhines a little favourable upon the Plants.

We may now make Layers of *Roſes*, *Jeſſamines*, *Honeyſuckles*, *Phillarea*, *Laurus Tinus*, and other ſuch like Shrubs.

Sow the Seeds of the *Laburnum*, *Spaniſh Broom*, and the *Berries* of *Bays*, *Yew* and *Holly*.

Sow Exotick Seeds from the hotteſt Climates upon Hot-beds, eſpecially the Annual Kinds, which require ſeveral Months and great Heat to bring them to Perfection.

Now cut down the *Spaniſh Jeſſamine* within four Inches of the Stem, at the ſame time giving them freſh Earth.

Make Layers of the *Yellow Indian* and *Portugal White Jeſſamines*, *Pomegranates*, *Olives*, and *Arbutus*, minding to interr only the moſt tender Branches, for thoſe which are once become woody will never take Root.

Sow *Orange* and *Limon* Kernels in Pots, as ſoon as they are taken out of the Fruit, and ſet the Pots in Hot-beds.

Now make Plantations of the *Lilly of the Valley* on the ſide of ſome ſhady Bank.

Flowers now blowing in the Green-Houſe and Flower-Garden.

WE have ſeveral kinds of *Hellebore* yet flowering, the *Winter Aconite*, *Snow-drops*, chiefly that with double Flowers, *Crocus* both the *Yellow* and the *Purple* kinds, ſome *Hyacinths*, ſingle *Anemonies*, *Perſian Iris*, *Single Hepaticas*, *Single Dafodils*, *Single Wall-Flowers*, ſome *Double Daſies*, *Stock Gillyflowers*, and the *Spring Cyclamen*; and in the Green-Houſe the *Thlaſpi Semper-virens*, ſome *Ficoides*, *Geraniums*, *Aloes*, and the *Yellow Indian Jeſſamine*.

Some *Oranges* alſo put out a few Bloſſoms, if they are not in good Health.

In the forcing Frames, at Mr. *Millet*'s a famous Nurſery-Man at *Northend* near *Fulham*, we have now *Roſes* and *Double Junquils* in Flower.

The *Mezerions* and *Laurus Tinus* yet remain in Bloſſom.

Works to be done in the Green-Houſe and Flower-Garden in MARCH.

NOW is the beſt Seaſon to ſow *Poppies*, *Venus Looking-Glaſs*, and ſuch other fine Annuals as we durſt not venture in the common Earth the preceding Month We may now alſo part or ſlip all kinds of fiberous rooted Plants that are not flowering, as *Gentianella*, *Double White Rockets*, *Scarlet Lichneſs*, *Cardinal Flower*, *Roſe Campions*, *Double Wall Flowers*, *Holyoaks*, *Perennial Sun-Flowers*, *Aſters* of all ſorts, *Monks-Hood*, *Sweet-Williams*, *Sea-Pinks*, &c.

Sow the Seeds of the *Stock Gillyflowers*.

Now ſlip and ſet *Box* for Edgings, or in Figured Works; but take up no more in one Day than you can plant.

Defend your *Tulips* from Blights, which endanger them this Month. Make a Frame of Hoops over your choiceſt Bed, and cover it with Mats in bad Weather. Some have Coverings of Canvas to take off and on at Pleaſure, which they make uſe of as well to ſhade their Flowers in the time of their Bloom, as to help them againſt the injurious Froſts and Blaſts.

Now mend and repair your Shelves and Places of Shelter for blowing your *Auriculas*, for at the End of this Month they ſhould be ſet in order. This Place ſhould face the Eaſt, and be defended on every other ſide from the Sun: The top ſhould have a Covering of Baſt-Mats or Canvas, to keep the *Auriculas* from Wet, for the leaſt Rain imaginable, ſpoils the Beauty of theſe Flowers.

About the Beginning of the Month tranſplant your *Carnation* Layers for blowing, if they were not planted out at *Autumn*, which is much the beſt time for that Work. Let the Earth for theſe Flowers be two thirds of Sandy Loam well incorporated with one third of rich *Melon* Earth, or rotted Wood: This Mixture ought to be at leaſt two Years old before it is uſed.

Sow now upon the Hot-bed ſuch Exotick Seeds as are leſs tender, and come ſooner to Perfection than thoſe ſown the laſt Month; ſuch as the *Naſtertium Indicum*, *French* and *African Marygolds*, *Balſamines*, *Convolvulus*, eſpecially the little *Blew*, the *China*, or *Indian Pink*, and ſuch others as would have been too rampant for the Hot-bed if they had been ſown the laſt Month; for till the middle of *May* we muſt not venture any of theſe abroad in the natural Ground; and therefore if they were to be ſown early they would touch the Glaſſes long before we could give them Liberty enough.

If we have not the Conveniency of Hot-beds, we may defer the ſowing of the *Afri-*

tan and *French Marygold*, the *Naſtertium* and *Marvel of Peru*, till the next Month, and then they will come up in the natural Ground, if they are ſown under ſome warm Wall.

Delay no longer to ſow the Seeds of the *Humble* and *Senſitive* Plants upon the Hot-bed; they are wonderful Curioſities, but muſt always be kept under Glaſſes.

Now ſow in the natural Ground the wild *Spirting Cucumber* and the *Noli me tangere*; they are diverting Plants when their Fruit is full ripe.

Give freſh Earth to your Pots of the *Campanula Pyramidalis*, and ſet them into ſome Pit where the Sun may come at them; this Method will make them grow tall, which is the chief Excellency of this Plant.

Now likewiſe ſow their Seeds, and take off Slips from their Roots.

Plant *Tuberoſes* in Pots of freſh Earth, giving them a gentle Heat, and no Water till they ſprout.

Tranſplant now the *Arbor Judæ*, and ſow the Seeds of it.

Graff the *Spaniſh White Jeſſamine* upon the common *White Engliſh* ſort.

Plant and make Layers of the *Paſſion-Tree* in moiſt Places, to make it bear Fruit.

Put ſuch Exotick Plants into a Hot-bed as have ſuffered in the Conſervatory, but take ſpecial Care they are well guarded from the Steam of the Dung by a due Thickneſs of Earth laid upon it.

Now tranſplant the *Amomum Plinii*, or *Winter Cherry*, prune their Roots and ſhorten their Branches, give them freſh Earth, and ſet them in the Front of the Green-Houſe, for they are hardy and will now bear the Air. *Note*, They are great Lovers of Water, and if they have Shade enough when they are ſet abroad, they will bear Fruit plentifully.

Take eſpecial Care now of your *Orange* and *Lemon-Trees* that they don't want Water, give them little at a time and often; uſe them by degrees to the Air, and we may preſerve their young Fruit, which is very apt to fall at this Seaſon of the Year, if they are over-water'd, or are too haſtily made acquainted with the Air.

Towards the End we may tranſplant *Yews*, *Hollys*, *Philirea*, and other *Evergreens*, and ſow the Seeds of the *Evergreen Privet*.

Mind to water your Caſes of *Auricula* Seeds.

In a warm Day begin to give a little Water to the moſt ſucculent *Ficoides*.

Flowers

Flowers now blowing in the Green-Houſe and Flower-Garden.

WE have now *Anemonies* both double and ſingle, *Hyacinths*, *Junquils*, ſeveral kinds of *Narciſſus*, and chiefly the *Narciſſus of Conſtantinople*, ſome of the *Precoce Tulips*, and of the later kinds of *Crocus*, particularly the *White Polyanthos* of all ſorts, *Violets*, *Daſies*, *Wall-Flowers*, *Stock Gilly-flowers*, *Iris's* of ſeveral kinds, *Hepatica's* of the double ſorts, *Crown Imperial*, *Dens Caninus*, *Grape Hyacinths*, and ſome ſorts of *Fritillaria*, a Flower now highly in requeſt in *Holland* for its vaſt Variety (as I am informed) and toward the End we have ſome few *Auricula's*.

The Trees in Bloſſom are the *Almond*, *Abricot*, *Peach*, *Arbor Judæ*, *Laurus Tinus*, ſome *Oranges*, and we have ſtill ſome Flowers of the *Indian Yellow Jeſſamine*, with ſome ſorts of *Ficoides*, or *Fig-Marygolds*, and *Aloes*.

Works to be done in the Green-Houſe and Flower Garden in APRIL.

WE may begin this Month with ſowing in the natural Ground the leſs tender Exotick Seeds, and ſuch Flower-Seeds as we have omitted to ſow in the preceding Month. Many Seeds from the *Cape of Good Hope* and from *Virginia* will come up, being ſown at this time of the Year in natural Borders well expoſed.

We may now ſow *Scarlet Beans*, *Scabious*, *Columbines*, *Marygolds*, *Gnaphalium*, and *Cyanus*.

We may now ſow *Pine* and *Firr-Seeds*, covering them with a Net to keep them from the Birds, who are very voracious of them, even after they are come up.

We may yet part and ſet all Fibrous-rooted Plants.

Now is the beſt time of the Spring to remove all ſorts of *Evergreens*, putting large *Hollys* in Baskets for their greater Safety in Tranſportation; for *Hollys* at beſt have but few Roots, and can hardly hold their Earth without this Help. Plant their Baskets with them, but *Yews* will do well enough without this Charge, if they have been dug about in the Nurſery, their Roots will be full of little Fibres, and will hold the Earth together.

Make freſh Hot-beds to forward your young Seedling *Oranges* and *Lemons*, and other Exotick Plants now come up, and fit to tranſplant from the firſt Hot-bed.

Pot ſome of your *Amaranthus Tricolor* and *Cockſcombs*; give them a freſh Bed to draw them tall.

About the Beginning, your *Auricula* Seed will begin to appear above Ground, if it has been carefully water'd, and be ſure let it not want at this time, for the young Plants will ſoon wither. Keep thoſe Caſes in the Shade till *Auguſt* that we plant them out.

Begin now to water your *Aloes*, *Sedums*, *Torch Thiſtles*, *Euphorbiums*, and other tender ſucculent Plants, but give it in very ſmall Quantities when the Sun ſhines hot, and now begin to uſe thoſe tender Plants to the Air by little and little.

The Windows of the *Orangery* may now be open from Morning till Night, if the Winds are not very violent.

Stick up your *Carnations*.

After Rain clip your Edgings of Box, Roll your Graſs and Gravel-Walks; alſo rake over and renew, if there is Occaſion, your Walks of Cockle-Shells and Works in

Sand, cut the Edges of your Graſs, and mow it often, for now it grows apace.

Stake up all Plants and Flowers which are now grown to any Height, for the Winds are now dangerous.

Deſtroy Weeds before their Seeds are ripe.

The *Auricula's*, which are now in their full Bloom, ſhould once in three Days be refreſhed with moderate Waterings; the Flowers will be the better coloured for it, and the Seed come to greater Perfection; but keep the Sun and Rain from them.

Flowers now blowing in the Green-Houſe and Flower-Garden.

THIS Month furniſhes us with great Variety of *Ranuncula's* and *Double Anemonies*, and towards the End we have ſome *Tulips*.

Daſies alſo ſtill continue flowering, as do alſo the *Double Hepatica's* and *Polyanthos* of ſeveral kinds. We have ſeveral kinds of *Narciſſus* and *Double Junquils* now in their Prime. The *Crown-Imperial* is not yet paſt flowering, and we have now ſeveral ſorts of *Iris* and *Fritillaries*, with ſome *Hyacinths*. We have alſo ſeveral kinds of *Cyclamen*, ſome *Stock-Gillyflowers* and *Single Pæonies* towards the End; ſome *Double Violets* yet remain, but above all we are now rewarded with the *Auricula*, which is in its Prime about the

20th. The Trees and Shrubs now blowing are the *Lilac*, *Perſian Jeſſamine*, *Laburnum*, *Double* and *Single-bloſſom'd Almonds*, the *Arbor Judæ*, ſome *Pears*, *Cherries*, and *Abricots*; and in the Green-Houſe ſome *Oranges*, *Ficoides*, *Aloes*, and ſome kinds of *Geranium*.

Works to be done in the Green-Houſe and Flower-Garden in MAY.

CUT down the Leaves and Flower-Stems of *Crocus*, and other bulbous-rooted Flowers that have done blowing, unleſs you deſign any of them to ſtand for Seed; and indeed I would adviſe every curious Perſon to ſave ſome of the beſt every Year, to have Nurſeries of Seedlings of every Flower, for from ſuch Seminaries we may expect numberleſs Varieties.

Gather now your *Anemonie* Seed as it ripens, for it is quickly carried away by the moſt gentle Air.

About the tenth is the beſt time to ſow *Carnation* Seeds, for if they were to be put ſooner into the Ground, they would grow woody before Winter, and many of them canker and go off. Let the Earth be freſh ſandy Loam well ſifted.

Our choice *Tulips* are now in Flower, and muſt be ſhaded from the Mid-day Sun, and defended from the Rain, if we are minded to have them laſt a long time in Flower; when they have done blowing, break off their Seed-Pods, that the Roots may gather Strength.

If any one has a mind to dry ſome of his choiceſt *Tulip Leaves*, he muſt provide Books of Brown Paper, and lay the Leaves of the Flowers ſingly between the Leaves of the Book; when they have been in this State for a Day preſs'd down by a very gentle Weight, they muſt be ſhifted into a freſh Book, and removed in like manner from one Book to another every 24 Hours, adding more Weight as they grow dryer: In-fine, when all the Moiſture is out of them, we may then ſtick them upon thick White Paper, with a little *Gum-Arabic* and fair Water, and they will hold their Colours for many Months. I the rather mention this way of drying Plants and Flowers at this time, becauſe every Lover of *Botany* is not perhaps rightly skilled in preſerving Specimens of Plants, and alſo becauſe this Month affords us greater Variety of Plants for that Purpoſe than any other Month in the whole Year.

Be now careful to tie up the Spindles of your *Carnations*, leſt they are broken by the Winds or other Accidents.

Repeat the ſowing of many annual Flowers, ſuch as the ſmall *Annual Stock*, *Venus Looking-Glaſs* and *Candy-Tufts*, giving them frequent Waterings (if the Weather be dry) till they come up.

About the fifteenth, if the Weather be gentle and ſettled, which is (as ſome ſay) when the *Mulberry-Leaves* are as large as a Crow's Foot, bring your *Orange* and *Lemon* Trees out of the Conſervatory. What I here mention of the *Mulberry*'s indicating to us the proper time for bringing abroad our tender Plants, has, in my Opinion, Reaſon enough in it, (tho' ſome will not allow it as a ſure Rule to go by;) for the *Mulberry-Tree*, which is a foreign Plant, and has a thicker Juice than any other Tree that I know of, requires (as we find) a ſettled Warmth and equal Temperature of Air to put its Juices into Motion; and as that Motion cannot in a few Days ſhew it ſelf in the Production of the Leaves, and would ſtop upon the leaſt Appearance of Froſt, ſo of Conſequence when we ſee the Leaves of this Tree arrived at the Largeneſs of a Crow's Foot, we may be aſſured the Weather has been for ſome time in a gentle State, and therefore our *Orange-Trees* may then come abroad with Safety; for we have had no Inſtance of Weather that has been capable of injuring the *Orange-Tree* after enjoying a ſerene Week in this Month. It is a thing worthy our Remark, how many different Degrees of Heat or Cold are neceſſary to the Vegetation of ſeveral Kinds of Plants. The Temper of Air in *January* puſhes forth the Buds of the *Elder-Tree*; the greater Warmth in *February* puts the *Gooſeberry-Buſh* and ſome ſorts of the *Quickſet* in Motion; in *March* we ſee the Bloſſoms of the *Almond* and *Peach-Tree*; in *April* the *Elm* and ſome others begin to open their Leaves, and the *Mulberry* will not ſtir till the Weather of this Month is ſettled; and every Plant may perhaps require a diſtinct Degree of Heat or Cold (call it what we will) to make it vegetate. This is not unlike what we obſerve in Melting or Liquifying of Metalick and other Bodies. Ice will melt with leſs Heat than Tallow, Tallow with leſs Heat than Wax, Wax with leſs Heat than Roſin, Roſin than Lead or Tin, and theſe will melt with leſs Heat than other Metals.

Upon bringing out your *Orange-Trees* and other Exoticks, clean their Leaves from the Duſt they have got in the Houſe, unleſs a gentle Shower ſaves you that Trouble; give them alſo freſh Earth on the Surface of their Pots or Caſes, and water them well when they are placed in the Order they ſhould ſtand. Let not the Sun ſhine too hot upon your *Orange-Trees*, for that will make their Leaves turn yellow.

Now make Cuttings of *Ficoides* and *Sedums*, letting ſuch of them as are very ſucculent lie a Day or two in the Sun after they are cut from the Plants, to dry the wounded Parts, and then plant them in an open Border to be potted after they have ſtruck Root, which will be in leſs than two Months.

Plant Cuttings of the *Arabian Jeſſamine*, they eaſily take Root.

Plant Cuttings of *Geraniums*, and other ſuch like Exotick Shrubs, in ſome open Border; they will take Root better there than in Pots.

About the tenth of this Month inarch *Orange* and *Lemon-Trees*, rather upon *Lemon* than *Orange* Stocks, they will make ſtronger Shoots: By this means we may have bearing Plants as ſmall as we pleaſe in a very ſhort time, for they may be cut from the Mother-Plants the middle of *Auguſt*.

Alſo now inarch the *Spaniſh White Jeſſamine*, and the *Indian Yellow Jeſſamine* upon ſtrong Stocks of the common *White Jeſſamine*, and be not fearful that theſe will not take upon the Stocks, becauſe our common *Jeſſamine* drops its Leaves, and the others do not; I have experienced the Truth of it, as well as the inoculating the *Laurel* upon the *Black Cherry* Stock, which grows very freely.

Such as are minded to build *Green-Houſes* for the uſe of the next Winter, ſhould not any longer delay that Work, leaſt the Walls be not thoroughly dry when the Plants ſhould be ſet in; and I cannot help taking Notice alſo how much the Intent of ſuch a Building ought to be regarded by the Architect; for hitherto I have not ſeen one *Green-Houſe* in *England* which had the Beauty of a good Building, and good Convenience for the keeping of Plants at the ſame time, which is one Reaſon why Gentlemen have been diſcouraged from the Culture of Exotick Plants.

Towards the End of this Month, or the Beginning of the next, cut ſome Leaves of the *Opuntia* or *Indian Fig*, letting them lie two or three Days to dry, before they are ſet in the Ground. The Earth for them ſhould be ſifted Rubbiſh of old Brick Walls one third, to be mingled with light rich Earth well ſifted. Set theſe Leaves about an Inch in this Earth, and let them remain abroad fifteen Days before you put them in a Hot-bed.

When the Weather is ſettled, tranſplant from the Hot-bed to the open Borders all your choice Annuals, as *Capſicums*, *African* and *French Marygolds*, *Aramanthus*, *Baſils*, *Convolvulus*, &c.

Plant Cuttings of *Pyracantha* of the tender Shoots, and Cuttings of the *Paſſion-Tree* in moiſt Places.

Flowers now blowing in the Green-Houſe and Flower-Garden.

OUR choiceſt *Tulips* are now in Flower, as alſo ſome *Stock Gillyflowers*, *Double Wall-Flowers*, *Monkshood*, *Single Scarlet Lichneſs*, *Double Pinks*, *Sweetwilliams*, *Double Yellow Globe-Flowers*, *Sea Pinks*, *Candy-Tufts*, *Venus Looking-Glaſs*, *Annual Stock*, *Perwinkle*, *Double Daſies* and *Featherſew*, *Foxgloves*, *Muleins*, Bulbous *Iris*, ſome *Anemonies* and *Ranunculus* that were put late in the Ground, *Double White Rocket*, *Honeyſuckles*, *Piracantha*, *Syringa*, *Roſes*, *Apple-Bloſſoms*, *Spireas*, *Spaniſh Broom*, *Guilder Roſes*, *Laburnum*, *Canterbury Bells*, *Cytiſſus*, *Columbines*, *Larkſpurs*, *Gladiolus*, *Poppies*, *Pæonies*, *Fraxinella*, *Spiderworts*, *Cyanus*, *Antirrhinum Valerian*, *Martagons*, *Lillies*, *Orchis*, *Iris*, *Marygolds*, ſome *Lupines*, *Oranges*, *Ficoides*, *Aloes*, *Sedums*, *Geraniums*; and in the Water-Tubs the *Yellow Nymphea* or *Water-Lilly*, *Pond-Weeds*, *Water-Ranunculus*, the *Flamula* or *Spearwort*, and *Frogbits*.

Works

Works to be done in the Green-Houſe and Flower-Garden in JUNE.

'TIS now a good time to take up ſuch bulbous Roots as have done blowing. Waſh them clean as ſoon as you have taken them out of the Ground, and ſpread them upon Mats in the Sun, that they may be well dry'd before they are laid up in the Houſe.

'Tis now the beſt Seaſon to tranſplant the Roots of *Cyclamen*, *Saffron*, and *Colchicum*.

Now viſit the Rivers, Bogs, Pools, Ponds, and Ditches for choice Aquatick Plants. We may tranſplant them, although they are Flowering, into our Water-Tubs, which make a very pretty Show among Exotick and other curious Plants. When you collect theſe Plants of the Waters, obſerve the Depth of Water they grow in, and allow them the ſame, if poſſible, when you plant them in the Tubs.

Lay ſuch of your *Carnations* as are ſtrong enough, and carefully pick off their weak and moſt tender Flower-Buds, for they rob the larger Pods of their Nouriſhment. The large-podded *Carnations*, which commonly burſt, muſt now be help'd, eſpecially after

Nature of her ſelf has ſplit one Side of the Flower-Pod, open the other Side of the Pod oppoſite to it with a fine Pen-knife, but touch not the Petals or Flower-Leaves; this Method will make the Flower open equally without ſcattering, which it certainly will do, if we were to ſplit down every Diviſion of the Pod. Alſo deſtroy Earwigs with *Oxhoofs* and *Tobacco-Pipes*; for the Way of guarding your *Carnations* from theſe deſtructive Inſects with Baſons and Troughs of Water, is of little Signification, becauſe they have Wings, though not eaſily diſcover'd.

Gather *Auricula* and *Polyanthos* Seed, and preſerve it in the Seed-Pods till you ſow it.

Bring abroad your *Aloes*, *Torch-Thiſtles*, *Euphorbiums*, and tender *Tithymals*, and clean them from the Duſt they have contracted in the Houſe: Alſo pull off with Care the decayed Leaves of your *Aloes*, and tranſplant them, if there is Occaſion, into bigger Pots.

We may now take off Cuttings of the *Euphorbium* and *Torch-Thiſtle*, letting them lie in the Sun till the Wounds are healed, before we put them into the Ground: Let the Earth for them be the ſame as I directed for the *Indian Fig*.

Now take off the Off-ſets and Suckers growing about the Roots and Stems of your *Aloes*,

Aloes; plant them in the ſame Earth mention'd above, and let them remain abroad fifteen Days before they are ſet into a Hotbed. Give theſe ſucculent Plants little Water till they have taken Root.

Water *Oranges* (which are now in Flower) frequently, a little at a time, that Fruit may ſet; and pick off the Bloſſoms where they are too thick. Now you can hardly give your *Myrtles* too much Water; remember they naturally grow in Marſhy Ground.

Continue to tranſplant Annuals after Rain, and ſow others to ſucceed thoſe ſown in the former Months.

Flowers now blowing in the Green-Houſe and Flower-Garden.

WE have now blowing *African* and *French Marygolds*, *Convolvulus*, *Female Balſams*, *Amaranthus*, *Larkſpurs*, *Candy-Tufts*, *Venus Looking-glaſs*, *Annual Stocks*, *Stock Gillyflowers*, *Double Scarlet Lychneſs*, *Roſe Campions*, *Sweetwilliams*, *Campanulas*, *Foxgloves*, *Muleins*, *Moth Muleins*, *Sea-Pinks*, *Double Pinks*, *Virgins Bower*, *Perwinkle*, *Cyanus*, *Lillies*, *Martagons*, *Monkshood*, *Sun-Flowers*, *Hollyhocks*, *Naſtertium Indicum*, *Gentian*, *Virginian Spiderwort*, *Scarlet Beans*, *Sweet Sultan*, *Poppies*, *Pomegranates*, *Olives*, *Oranges*, *Lemons*, *Geraniums*, *Ficoides*, *Sedums*, *Fritillaria Craſſa*, *Roſes*, *Honeyſuckles*, *mine*, *Oleander*, *Spaniſh Broom*, *Hellebore*, *Indian Fig*, ſome *Carnations*, *Double-flower'd Featherfew*, *Valerian*, *Sea Ragwort*, *Orchis*, *Antirrhinum*, *Lupines*, and *China Pinks*. In the Water-Tubs we have the *Double White Nymphea* or *Water-Lilly*, the *Single Yellow*, the *Water Violet* and *Water Millfoil* in Flower.

Works to be done in the Green-Houſe and Flower Garden in JULY.

WE may yet continue to lay *Carnations* as they gather Strength, and often refreſh them with Water, ſhading the Bloſſoms from the violent Heat of the Sun.

Continue to deſtroy Weeds, and cut down the Flower-Stems of ſuch curious Flowers as have done blowing, unleſs they are worth ſaving for Seed.

Now is the beſt time to raiſe *Myrtles* of Cuttings, taking only the moſt tender Shoots; ſet them in the Shade, and give them frequent Waterings.

Tranſplant now ſuch Bulbs as you took not out of the Ground the laſt Month.

We may ſow *Tulip* Seeds, which are now ripe, in Caſes of light Earth, that they may be carried under ſome Shelter in the Winter.

Sow alſo ſome *Anemony* Seed as directed in *February*, and ſprinkle it often with Water.

Clip for the ſecond time *Box Edgings*.

Continue to make Cuttings of *Torch-Thiſtles*, *Indian Figs*, *Fig-Marygolds*, *Tythimals*, *Sedums*, and other ſucculent Plants.

Give freſh Earth to the Surface of your *Orange* Tubs, which Work ſhould be done at leaſt four times a Year.

About the 20th inoculate *Oranges* rather upon *Lemon* Stocks than any other.

This is the time when the Berries of the *Coffee-Tree* ripen; they are then of a bright red Colour, and may be gather'd for ſowing immediately, cleaning their Seeds from the Pulp: Set them ſingly about an Inch deep in Pots of fine Earth, and give them the Aſſiſtance of a Hot bed, by which means they will ſprout in leſs than ſix Weeks time, as I have ſeen at the Phyſick-Garden at *Amſterdam*. This Plant being a great Rarity, ſee the Figure of it *Plate* I. *Fig.* II.

The Fruit of the *Ananas* being ripe about this time, cut off the Crown of Leaves, which grows on the top of it, and plant it in light ſandy Earth, it will preſently ſtrike Root with the Aſſiſtance of a Hot-bed.

We may alſo now lay down young Shoots of the *Arabian Jeſſamine*.

Tie up and prune all your Exotick Plants which grow diſorderly; they will be cover'd with freſh Shoots before they are ſet into the Houſe.

Gather ſuch Flower-Seeds as are now ripe, drying them well in their Seed-Veſſels before they are beaten out, and even after that, dry them in the Sun for a Week or ten Days before you lay them up, for elſe they will be ſubject to rot.

Yet ſow ſome Annuals in Edgings, to blow in *September*, for then the Garden wants Flowers.

Flowers now blowing in the Green-Houſe and Flower-Garden.

THE *Carnation* is now the Glory of the Flower-Garden, and the Seedlings of that Flower offers ſomething new every Day. The other Flowers now blowing are *Oranges*, *Lemons*, *Myrtles*, *Coluteas*, *Oleanders*, *Geraniums*, *Paſſion Flowers* of ſeveral kinds, *Jeſſamine* of *Arabia*, *Braſil Jeſſamine*, common *White Jeſſamine*, *Pomegranates*; *Olives*, *Capers*, *Bean Caper*, *Ficoides*, ſome *Aloes*, *Sedums*, *Dittany*, ſome *Roſes*, *Amomum Plinii*, *Convolvulus*, *Amaranths*, *African* and *French Marygold*, *Tulip-Tree*, *Golden Rod*, *Fritillaria Craſſa*, *Apocinum* ſeveral ſorts, *Aſphodel*, *Tuberoſes*, *Cardinal Flower*, *Double Scarlet Lychneſs*, *Campanulas*, *Virgins Bower*, *Sweet Sultans*, *Capſicum*, *Marvel of Peru*, *Female Balſams*, *Eagle Flower*, *China Pinks*, *Sun-flowers*, *Hollyhocks*, *Foxgloves*, *Everlaſting Flowers*, *Scarlet Beans*,

Beans, ſome *Double Poppies*, *Gentian*, *Fraxinella*, *Naſtertium Indicum*, *Veronica*, *Nigilla*, *Chriſanthemum*, *Lupines*, *Stock Gillyflowers*, *Spiderwort*, *Indian Figgs*, *Arbutus*, and ſome of the late ſown Annuals.

* * *

Works to be done in the Green-Houſe and Flower-Garden in AUGUST.

THE beginning of this Month is a good Seaſon for parting *Auricula's*, that they may gather ſufficient Strength before Spring. Rather plant one ſingle Head in each Pot than covet many, for where we leave more than one upon a Root, we muſt expect the Bloſſoms will be ſmall.

'Tis now a proper time to tranſplant your Seedling *Auricula's* about five Inches apart, upon a Border of well ſifted Earth; give them a gentle ſprinkling of Water after planting, and ſhade them from the Sun with Mats for fifteen Days.

Now alſo tranſplant your Seedling *Polyanthos* upon a ſhady Border, and divide the old Roots.

If we have any good Seeds of bulbous *Iris*, *Fritillaries*, and *Ranunculus*, it is now a very proper Seaſon to ſow them, covering the Seeds with a thin Coat of fine ſifted Earth. *Note*, Theſe and all other Seeds of bulbous Flowers, ſhould have frequent Sprinklings of Water during the Summer Heats, and be cover'd with Mats in the Winter. Seminaries of this kind will reward our Patience with great Variety of beautiful Flowers. *Note* alſo, The beſt *Ranunculus* Seed comes from *France*.

Shade your *Anemony* and *Tulip* Seed, which was ſown in the preceding Month.

Plant *Single Anemonies*, and we may now tranſplant *Hyacinths*, *Narciſſus*, *Lillies*, *Martagons*, *Crocus*, and *Snowdrops*.

Cut down the wither'd Stalks of ſuch Flowers as have done blowing, and we may now part their Roots for Increaſe.

Gather Seeds in a dry Day.

The middle of the Month, or ſomewhat later, cut the inarch'd *Orange* Stocks from the bearing Trees, but be careful you do it gently, for fear of breaking the new graffed Branch from the Stock; leave the Clay upon them till the following Spring, and guard them from high Winds.

It is now a good Seaſon to tranſplant *Myrtles* and *Orange* Trees, if that Work was not done in the Spring.

Uſe not your Cuttings of *Torch-Thiſtles*, *Aloes*, *Indian Figgs*, &c. too tenderly in the Hot-beds; give them Air that they may harden againſt the Winter.

Plant Slips of Pinks in a Nurſery, to plant out the following Summer.

We may now make Layers of all ſorts of Shrubs and Trees which remain abroad all Winter, always minding to lay down the moſt tender Shoots.

Towards the End take off and plant out ſuch of your *Carnation* Layers as are well rooted; ſet them now in the Places where they are to blow, the Flowers will be much ſtronger than if they were to be planted in the Spring. Alſo in this Month we may lay ſuch *Carnations* as were not ſtrong enough in the former Month, but theſe will not be fit to tranſplant till *March* next.

Tranſplant ſeedling *Carnations* at a Foot diſtance.

If we find any old Roots of *Carnations* which are diſpoſed to blow late, put them now in Pots of freſh Earth to ſet into the Green-Houſe in *October*; I have often by that means had good Flowers the greateſt Part of the Winter.

Now ſet into the Houſe your *Aloes*, *Torch-Thiſtles*, *Euphorbiums*, and other ſuch tender ſucculent Plants.

Flowers now blowing in the Green-Houſe and Flower-Garden.

WE have yet ſome *Carnations*, with *Sun-Flowers* and *Hollyhocks*, *Roſes*, *Pomegranates*, *Arbutus*, *Jeſſamines*, the *Common White*, *Spaniſh White*, *Braſil White*, *Indian Yellow*, and *Arabian Jeſſamine* both *Double* and *Single*, *Oranges*, *Myrtles*, *Oleander*, *Apocinum*, *Ficoides* of many kinds, ſome *Aloes*, *Paſſion-Flowers* of various ſorts, ſome *Sedums*, *Geranium*, *Tree-Mallows*, *Colutea*, *Guernſey Lilly*, *Tuberoſes*, *Cardinal Flower*, *Female Balſam*, *Marvel of Peru*, *Chriſanthemum*, *Everlaſting Flowers*, *Colchicums*, Autumn *Yellow Crocus*, *Cyclamens*, *African* and *French Marygolds*, *Convolvulus*, *Capſicum*, *Starworts*, *Amaranths*, *Nigella*, *Sweet Sultan*, *Scabious*, *Naſtertium Indicum*, *Linaria*, *Stock Gillyflowers*, *Eringo*, *Virgins Bower*, and thoſe Annuals ſown late, *Annual Stock*, *Poppies*, *Larkſpur*, *Candy-Tufts*, &c. Alſo we have *Double Violets*, ſome *Auriculas*, and *Polyanthus*, which now feeling a Temper of Air equal to their natural blowing Seaſon, (i.e. *April*) are led to bring forth their Flowers at this time.

Works to be done in the Green Houſe and Flower-Garden in SEPTEMBER.

YOU have now ſeveral kinds of Flowers riſing to a conſiderable Height; therefore to prevent Hazards by the Winds, tie them carefully to Stakes, for if Plants are looſe, a little Wind injures them.

If you have not in the preceding Month taken off your *Carnation* Layers, defer that Work no longer, but be ſure to plant them in the Places where they are to bloſſom, you will find the Advantage by ſo doing.

Now ſow *Poppies*, *Larkſpurs*, *Annual Stock*, *Candy-Tufts*, and *Venus Looking-Glaſs*, to ſtand the Winter, and bloſſom early in the Spring.

The firſt Week in this Month we may yet continue to plant *Evergreens*, ſuch as *Hollies*, *Yews*, &c. if they riſe with good Roots, but *Auguſt* is much the better Seaſon.

Yet tranſplant flowering Shrubs of all ſorts, and make Layers of them.

We may ſtill continue to tranſplant all Flowers which are fiberous rooted, and have done blowing. Alſo cut down the Flower-Stems of thoſe which are to remain growing, within three Inches of the Ground.

'Tis now a good time to put into the Ground ſome *Anemone* and *Ranunculus* Roots to blow early; let the Earth be a light natural Soil well ſifted for the *Anemonies*, but the *Ranunculas* ſhould have about half rotted Wood mixed with it.

About the End put in ſome *Tulips*, eſpecially the Breeders, but give them not rich Ground, remembring always 'tis Want of Nouriſhment is the Cauſe of Variegations in Plants; therefore my Advice is to plant all breeding *Tulips* in Rubbiſh of old Buildings one half, and the reſt natural Soil; or elſe ſet them about your Pyramid *Yews*, which have ſtood long enough to impoveriſh the Earth.

Now put into the Ground your *Junquil* Roots, and let them ſtand two or three Years in the ſame Place.

Sow *Stock Gillyflowers* that you may have a Supply in the Spring, if the Winter deſtroys your old Stocks. They love a dry Soil, mix'd with Lime-Rubbiſh.

About the middle of the Month, houſe your *Orange* Trees, *Geraniums*, *Ficoïdes*, *Sedums*, and others of the like tender Nature; but ſet them not in order till *October*, that you may bring in your *Myrtles* and ſuch more hardy Plants. Let the Windows of the Houſe remain open Night and Day.

We may yet ſow the Seeds of bulbous-rooted Plants, as *Tulips*, *Anemonies*, *Ranun-*

culus, Bulbous *Iris*, *Martagons*, *Crocus*, and *Fritillaries*, in Pots or Caſes of freſh natural Earth well ſifted.

Flowers now blowing in the Green-Houſe and Flower Gardens.

WE have now in Flower the common *White Jeſſamine*, the *Spaniſh White*, the *Indian Yellow*, and the *Braſil Jeſſamines*, *Geraniums* of ſeveral ſorts, various kinds of *Ficoides*, *Leonurus*, *Paſſion-Flowers*, ſome *Aloes*, *Thlaſpi Semper-virens*, *Amomum Plinii*, *Guernſey Lilly*, *Golden Apples*, *Amaranths*, *Cyclamens*, *Colchicums*, *Antirhinum*, *Chriſanthemum*, *Sun-flowers*, *Hollyhocks*, *Tuberoſes*, *African* and *French Marygold*, *Double Violets*, *Marvel of Peru*, *Female Balſams*, *Convolvulus*, *Naſtertium Indicum*, *Spiderwort*, *Scarlet Beans*, *Saffron-Crocus*, *Poppies*, *Larkſpurs*, *Annual Stock*, *Venus Looking-Glaſs*, *Candy-Tufts*, *Stock Gillyflowers*, ſome *Carnations*, *Auriculas*, *Polyanthos*, *China Pinks*, *Myrtles*, *Monthly Roſes*, *Aſters* of ſeveral kinds, *Pomegranates*, *Arbutus*, *Oleanders*, *Colutea*, and *Capſicum Indicum*.

Works to be done in the Green-Houſe and Flower-Garden in OCTOBER.

ABOUT the Beginning of this Month, houſe your *Myrtles*, *Amomum Plinii*, *Marum Syriacum*, *Meleanthus*, and ſuch tender Greens, as remain yet abroad, at the ſame time giving them and all other Houſe-Greens a freſh Covering of Earth, without diſturbing their Roots: Tie up ſuch as grow diſorderly, and ſet them in their proper Places to ſtand the Winter, minding to ſet the moſt tender Plants, ſuch as *Aloes*, *Torch-Thiſtles*, *Melon-Thiſtles*, *Euphorbium*, &c. neareſt the Sun, and the others which are more hardy towards the Back of the Houſe. After the middle of the Month give no more Water to your tender ſucculent Plants, for they are ſubject to rot.

At the placing your Exoticks in the Houſe, obſerve that only one third Part of the Floor be taken up with the Shelves for the Plants, ſo that there may be as much Vacancy left between them and the Windows, and the ſame Space between them and the Back of the Houſe; this Proportion being obſerved, the Houſe will not be ſo ſubject to Damps as if it was crouded, and there will be Air enough contained in it to nouriſh

riſh the Plants, if it was to be cloſely ſhut up a Month together.

When you water your houſed Plants, let it be in the Morning when the Sun ſhines upon them.

Keep open the Windows of the Houſe Day and Night till about the fifteenth, and after that time open them only in the Day-time.

Now make an end of putting in your *Tulips*, and plant alſo ſome *Anemonies* and *Ranunculus*.

Continue ſtill to tranſplant and lay *Roſes* and ſuch like flowering Shrubs. Alſo plant the Cuttings of *Jeſſamine* and *Honeyſuckle* in ſhady Borders, well wrought with a Spade, and be ſure to bury at leaſt two Joints of each Cutting in the Ground.

We may now ſow the Berries of *Yew*, *Holly*, and ſuch Evergreens as have been prepared in Earth or Sand.

Set your Pots of *Carnations*, which are now blowing, into the Green-Houſe near the Door, where they may have the moſt Air. So alſo in the placing your Exotick Plants in the Houſe, let the moſt tender ſtand the moſt remote from the Door; the more hardy will bear the Air, eſpecially the *Ficoides*; but uſe none of them with too much Tenderneſs, for more Plants have been kill'd with too much Care than have been preſerved.

golds, *Leonurus*, *Apocinums*, *Spaniſh*
Indian Yellow Jeſſamine, *Braſil Jeſſa*
mon Jeſſamine, *Thlaſpi Semper-vir*
granate, *Arbutus*, *Anemonies Sing*
thos, *Carnations*, *Stock Gillyflowe*
Antirhinum, *Amaranths*, *Double Vi*
fron-Crocus, *Colchicum*, *Monthly Ro*
ſorts of *Cyclamen*, *Paſſion-Trees*
kinds, *African* and *French Marygoi*
of Peru, *Capſicum*, *Single Wallfl*
ſome Bulbs from the *Cape of*
Heartſeaſe, or *Viola Tricolor*.

Works to be done in the Green-Houſe and Flower-Garden in NOVEMBER.

IN this Month, if the Weather is not very ſevere, open the Windows of your Green-Houſe a little, eſpecially if the Sun ſhines, and at the ſame time give Water to ſuch Plants as require it. Let all the Water you uſe to the houſed Plants be as ſimple as poſſible, for Mixtures of Dungs, or other hot Ingredients, ſpoil your Plants.

If Froſts ſhould begin to ſet in, make a ſmall Fire of Charcoal, and when it burns clear, hang it up near the Windows; but do this only at Night: Or indeed if you had the Conveniencіency of one of thoſe Chimnies improved by the Reverend and Learned Mr. *Deſaguliers*, it might be ſet to Work upon this Occaſion; 'tis much the beſt Invention that I know of for warming a Green-Houſe.

In this Month lay up Heaps of Earth for your ſeveral ſorts of Flowers, and make the proper Mixtures for the ſeveral Exoticks, as I have directed in the former Months. Where the Ground is too ſtiff, and we deſire a natural Mixture, to bring it to the State of Loam, we muſt add to it a ſufficient Quantity of Drift or Sea-Sand.

Now lay down your *Auricula* Pots upon their Side, the Plants towards the Sun, for much Wet rots their Leaves, and Froſt is very injurious to them.

Shelter your young ſeedling Bulbs from the Froſt, but give them Air every Day, or they will go off.

If the Weather be open, we may yet tranſplant *Roſes*, *Jeſſamine* and *Honyſuckle*, *Syringa* and *Lylac.*

Now cut down the Stalks of Flowers that have done blowing, within three Inches of the Root; I mean ſuch as blow tall, for *Saffron*, *Cyclamen*, and *Colchicum*, muſt have their Herbage preſerved till it naturally decays.

Un-nail your *Paſſion-Trees* from the Wall, and lay them upon the Ground, that when ſevere Froſts come we may cover them with Straw.

Tie up all Trees and Shrubs to ſtakes, for the Wind of this Seaſon breaks and deſtroys ſuch as are looſe and at liberty.

We may about the Beginning, plant *Hyacinths*, *Junquils*, and *Narciſſus*, *Polyanthos* in Pots, and plunge them into Hot-beds to bloſſom about *Chriſtmas.*

Flowers now Blowing in the Green-Houſe and Flower-Garden.

THE *Strip'd Lilly* is now ſo beautiful, that I cannot help taking Notice of it among the Flowers and Ornaments of this Month. We have now Blowing *Laurus Tinus*, ſome *Myrtles*, *Spaniſh White Jeſſamine*, *Yellow Indian Jeſſamine*, *Candy-Tuft-Tree*, *Geraniums*, *Ficoides*, ſome *Carnations* in the Houſe; *Aloes*, the *Amomum Plinii*, with its pretty Scarlet Fruit, *Leonurus*, the *Golden Apples*, ſome *Paſſion Flowers*, *Single Anemonies*, *Gentianella*, ſome *Polyanthos*, *Stock Gillyflowers*, and *Double Violets*.

* * *

Works to be done in the Green-Houſe and Flower Garden in DECEMBER.

AS no Plant can live without Air, a Gardener muſt now act with Judgment in helping his *Green-Houſe Plants*; for the Air Abroad is now ſo ſharp, that was it to be lett into the Houſe immediately upon the Plants, it would pinch many of them to Death; and if the Plants were to be ſhut up for any conſiderable Time, without recruiting the Air in the Houſe, they would be ſuffocated; it is therefore adviſable to provide ſome Means to recruit the Air in the Houſe, from Time to Time, as there is occaſion with freſh Air, corrected in ſuch a manner, that it may feed the Plants without pinching their Rind or Bark, as the Air Abroad at this Seaſon would do, if it was ſuffer'd to blow immediately upon them without Correction. Therefore, at the End of every *Green-Houſe*, there ought to be an Antichamber, thro' which we ought to paſs in the Winter, and not by the common Door or Windows in the Front: The Chamber which I now ſpeak of is recruited with freſh Air from Abroad every time we go into it; and upon opening the Door of that Room into the *Green-Houſe*, the Air there mixing with the other, which has been pent up, impregnates it with new Parts, which contribute to the Vegetation or Growth of Plants: Now to explain what I mean by by theſe Parts in the freſh Air, which are neceſſary to the Growth of Plants, I muſt have Recourſe to ſome Experiments which have been made upon Air, with reſpect to the Nouriſhment of Animals, who are in many things analogus to Plants: For Example, a Man who goes into a Diving-Tub, where he is cloſely ſhut up from Air, except only what the Tub contains, will after a little Space find the Air grow hotter and hotter, 'till at length he is in Danger of being ſuffocated, and can have no Relief but by the Admiſſion of freſh Air: This ſhews us that in Air, there is ſome particular Quality which is neceſſary to preſerve Life in Humane Bodies, and when that Quality is exhauſted, the remaining Air becomes uſeleſs: So every one who knows but little of the Nature of Plants, has certainly taken Notice, that a Plant, which has for ſome time been debarr'd from Air, turns ſickly, loſes its Verdure, and often languiſhes beyond Cure. But again, we have another Experiment tending to confirm the former, further explaining what that Quality is in the Air, which is neceſſary to maintain Humane Life, which ſeems to be the ſame, which is neceſſary to maintain Fire or Flame: A lighted Candle, for Example, being ſet under a Bell, cloſely fix'd upon a Table, will burn perhaps a Minute or two in Proportion to the Quantity of Air pent up with the Candle in the Bell; but as ſoon as the Quality in that Air, which is neceſſary to feed the Flame, is exhauſted, the Candle goes out: This has been try'd too often to admit of any Diſpute, that the Candle goes out by Chance; and we find that by letting into the Bell ſome freſh Air, a little before the Candle ſhould have gone out, it will ſtill continue burning; and then to ſhew that this Quality in the Air is the ſame which feeds the Life in Humane Bodies, it was try'd, whether the Air, returning from the Lungs, would not have the ſame Effect upon the Candle, as the External Air had before, but it had not; the Candle went out at its uſual Time. Thus it ſeems, when we ſuck in Air for Breath, the Lungs takes what is neceſſary for the Nouriſhment of our Bodies, and returns back the reſt. But I believe I have ſaid enough to explain what I deſign'd, in preſcribing the letting in of freſh Air, at every Opportunity, into the Green-Houſe, and ſhall now proceed.

Give little Water to your Green-Houſe Plants, and be ſure remember this Rule, that *Aloes*, *Euphorbiums*, *Indian Figs*, *Melon Thiſtles*, *Torch Thiſtles* and *Sedums*, have none at all 'till *March* is almoſt out.

Provide Shelters for your tender Flowers, ſuch as choice *Anemonies* and *Ranunculus*, for now the great Froſts begin.

Be not over haſty in warming your Green-Houſe with Artificial Heats, but let in as much Sun as poſſible; rather ſtudy to keep the Froſt from your Plants, than make them grow, for untimely Shoots ſpoil Plants.

Pick off dead and rotted Leaves from your *Exotick Plants*, for they ſoon infect the whole.

Flowers now Blowing in the Green-Houſe and Flower-Garden.

THE Leaves of the *Strip'd Lilly* are now very beautiful, equal to any Flower. We have now in Flower the *Lauruſtinus*, the *Glaſtenbury Thorn*, *Geraniums*, *Candy-Tuft-Tree*, or *Thlaſpi Semper-virens*, *Yellow Indian Jeſſamine*, *Spaniſh White Jeſſamine*, *Cyclamen*, *Ficoides*, *Aloes*, ſingle *Anemonies*, *Stock-Gillyflowers*, ſingle *Wall-Flowers*, *Antirhinum*, *Common Primroſes*, *Polyanthos*; and in Fruit, the *Arbutus*, or *Strawbery-Tree*, *Amomum Plinii*, *Golden Apples*, *Oranges*, *Lemons*, *Citrons*, *Pyracantha*, *Olives* and *Pomegranates*; and in our Hot-Beds we have ſome *Hyacinths* and *Narciſſus*. We have now alſo in Flower the *Black Hellebore*, ſome *Snowdrops*, and the *Winter Aconite*.

A
DESCRIPTION
OF A
GREEN-HOUSE,
CONTRIVED

For the good keeping of Exotick PLANTS *in the Winter; the Deſigns by Seignior* GALILEI *of* Florence.

AS I conceive the little Regard for *Exotick Plants* is chiefly owing to the Difficulties which Gentlemen have met with in preſerving them in the Winter, ſo I have endeavour'd to lay down ſuch Rules for their Management, as may render the Manner of their Culture, eaſy and familiar to every Lover of thoſe Rarities; and when I conſider how much the Beauty and Advantage of the *Orangery* is owing to the good Condition of the *Conſervatory*, I am the leſs ſurpriſed to meet every Day with valuable Collections of Trees half poiſoned with Charcoal, or pinch'd to Death with the Froſts; and all this is owing to the ill Contrivance of our *Engliſh* Green-Houſes, as I have mentioned in my *New Improvements*, *Part* III. *Pag.* 198. 'Tis therefore I have conſulted with Seignior *Galilei*, a moſt skillful Architect, about compoſing ſuch a Green Houſe as might be agreeable to the Rules of Architecture, and at the ſame time be rightly adapted to the Welfare of Foreign Plants.

Plate II. is the Plan or Ground-Plat of a Green-Houſe, which will be ſufficient with the following Directions to explain the IIId and IVth Plates.

A and B are two Rooms at the Ends of the Green-Houſe for the Uſe of the Gardener, or to be employ'd otherwiſe as our Fancy directs. Theſe Rooms are Paſſages into the Green-Houſe in the Winter, that the cold Air may not directly be let in upon the Plants; *a b* in thoſe Rooms are Places for Seeds, Inſtruments, Papers, Books, *&c.* and thoſe mark'd *c c* for Beds.

C in the half *Decagon* are Benches for the moſt tender Plants, ſuch as *Aloes*, &c. This Place is appointed for thoſe Plants, becauſe they may enjoy the Sun from its Riſing till it Sets; and the *Cupola* being all Glaſs towards the South, will ſtill contribute to give them more of the Sun's Warmth, but the Pillars *d e f g*, which ſupport half the *Cupola*, may be left out or kept ſtanding at Pleaſure; they will be Ornaments when the Plants are in the Houſe, but are of no great Uſe in ſupporting the *Cupola*, the Roof alone may bear up that Part of it.

The Pillars *b i k l m n o p* are of the *Corinthian* Order, as are the others which ſupport the *Cupola*; they are ſo diſpoſed as to let the Sun paſs into the Houſe with very little Interruption, which is the chief thing to be conſidered in the Contrivance of a Green-Houſe.

The Saſhes of Glaſs muſt be of equal Height with the Pillars, and be ſo diſpoſed, that they may ſlide eaſily in their Frames up and down, as we have Occaſion to give Air to the Plants in the Houſe; and they muſt alſo be ſo contrived, as to be flung up into the Freeze when the Plants are out of the Houſe, ſo as to leave the Front open like a *Portico* or *Colonade*.

The Windows alſo of the Freeze muſt be made to ſlide down when we are diſpoſed to let in Air at the top of the Houſe, which is often neceſſary.

The Saſh-Frames likewiſe from the Pillar *i* to *o*, may be made to run in Grooves, like the Scenes in a Theatre, ſo that we may incloſe the *Semi-Decagon* when we give Air to the others which are more hardy.

D D are the Benches for the moſt hardy Green-Houſe Plants, ſuch as *Oranges*, *Lemons*, *Myrtles*, &c. they are ſo diſpoſed as to admit of Walks about them for Convenience of Watering.

E is a Grotto and Fountain, very uſeful for watering the Plants in the Winter, for the Water in that Baſon will be ſo temper'd with the warm Air of the Houſe, that it will be nouriſhing to the Plants, which Water brought directly from without Doors would not be, but rather prove injurious to them; and I leave every one to judge how great an Ornament this will be, as well in Winter when the Plants are in the Houſe, as in Summer when the Houſe will be made a Room of Entertainment.

F F are two Chimneys, which ſerve as well to warm the Rooms at the End of the Green-Houſe, as to convey warm Air among the Plants. [See the Contrivance of theſe Chimneys in the Reverend Mr. *Deſaguliers*'s Book, entitled, *Fires improved.*] A Green-Houſe contrived after this manner has little need of Shutters to the Windows, for the Sun, and Heat from the Chimneys will always keep the Air in the Houſe ſo warm, that the Froſts cannot do the Plants any Damage; but in the moſt rigorous Seaſon we may only cover thoſe Windows in the half *Cupola* with Straw Mats, for the Plants there, are of the moſt tender Sorts. Thus I have endeavoured to explain the Uſe of this Green-Houſe, which is ſo ingeniouſly diſpoſed by Seignior GALILEI: See the *Section* and the Upright of it, *Plate* III. and IV.

FINIS.

AUG 23 1919

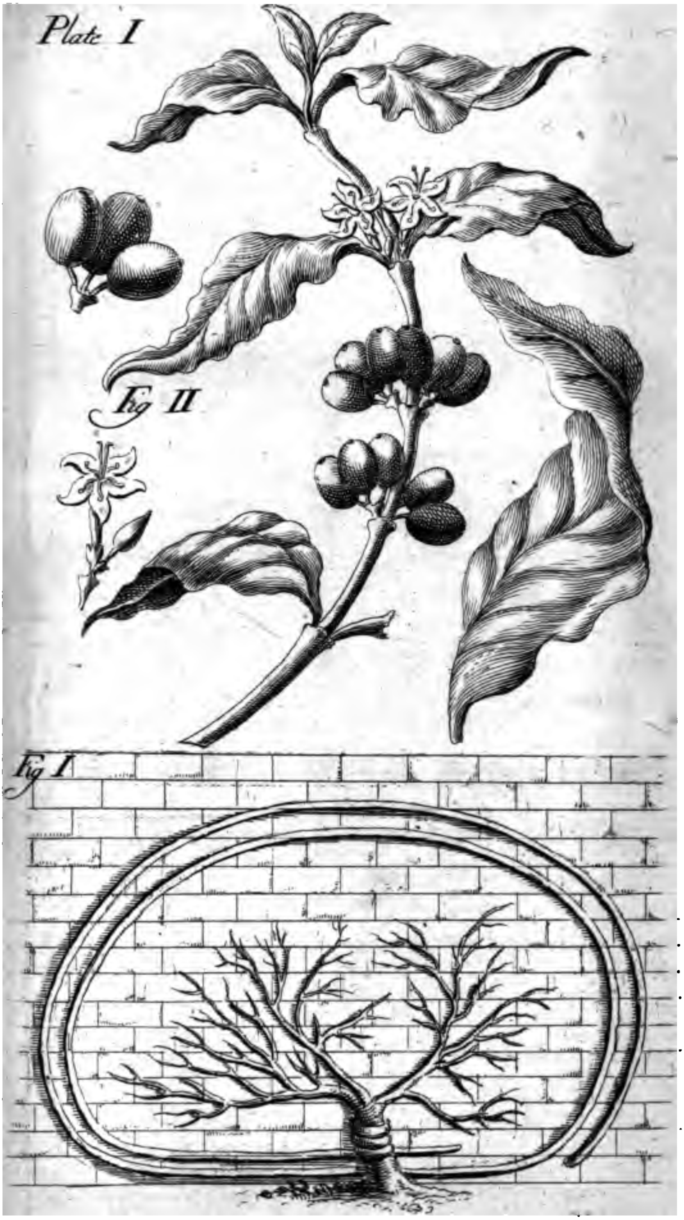
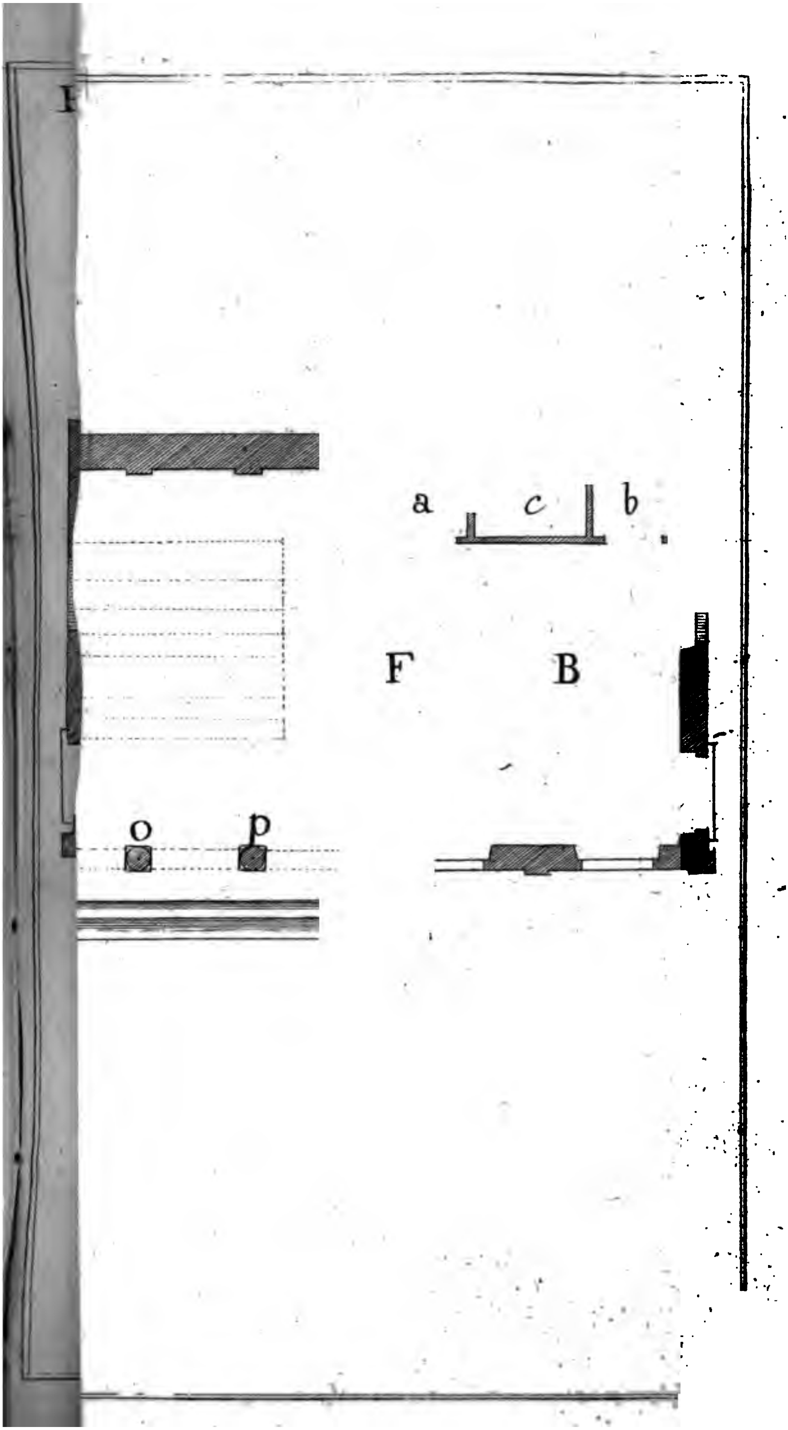


Plate I
Fig II
Fig I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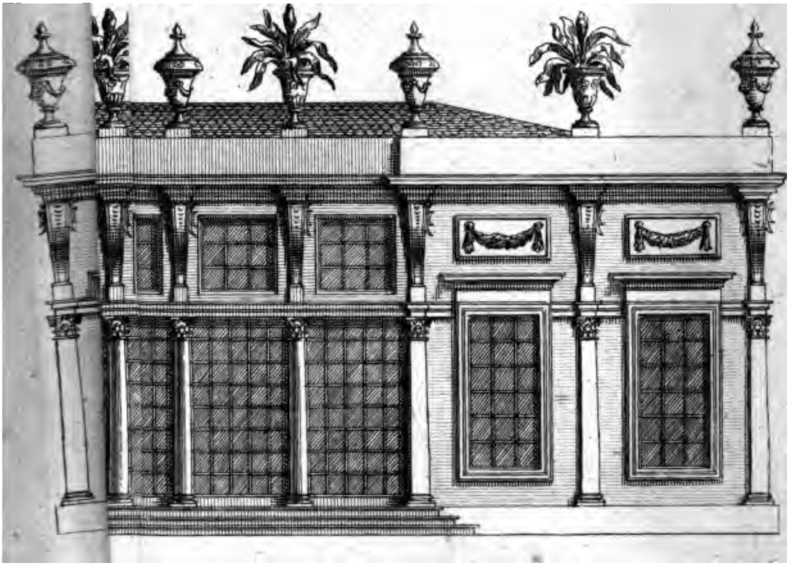

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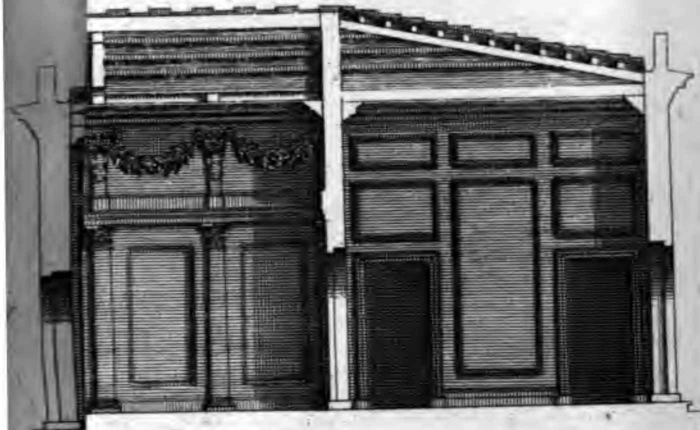

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